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JAMES P. WARBASSE, M. D. Special Editor
JOS. MacDONALD, Jr., M. D. Managing Editor

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VOL. XXIX. SEPTEMBER, 1915. No. 9

A STEEL PIN OPEN METHOD OF TREATING FRACTURES.

G. S. FOSTER, M.D.,
Surgeon and Pathologist to the Hospital Notre Dame de Lourdes,
MANCHESTER, N. H.

It is with no claim of originality that I bring this method of treating fractures before the profession. On the contrary, the *modus operandi* was first used by my colleague, Dr. Larochelle. The results which he obtained appealed to me so much that I felt that the idea was worthy of consideration by the surgical profession.

Fig. 1. Case I. Typical Colles fracture. Upper fragment driven into lower. Marked displacement.

The method is simple, yet very effective. It has the one marked advantage over other methods in which metal retentive material comes in contact with the bone, that when reconstruction is complete, no metal remains to act as a foreign body. Lane plates have this disadvantage, that they are left to act as a foreign body after the completion of their usefulness. The material used in this method is entirely withdrawn after a certain period.

Operative Technic.—The fracture is cut down in the usual manner, and the Lane technic is carried out in every detail. The bone is touched only by instruments; even the gloved finger is not permitted to come in contact with it. I believe that Lane has developed the safest technic in this regard. One part which is not perhaps as customary in bone surgery as it will be later, if the foregoing method is used, is the cutting down upon the injured bone the day of injury whenever possible. After the soft tissues are carefully dissected away and the fractured area laid bare, all blood clots, if any be present, are cleaned away by gauze sponges. The bone ends are then dovetailed in as nearly normal form as is possible. A hole is drilled very obliquely through the two fragments. After the proper depth is reached the drill is withdrawn while the fragments are carefully held in place by a bone clamp. A steel pin of the proper size is driven through the drill hole by a specially constructed steel hammer so as to prevent slipping or an angular blow. This is a very important point, because unless it is adhered to, the pin will not be solidly placed or the bone may be cracked. If either of these, especially the latter, happens, the whole operation is fruitless.

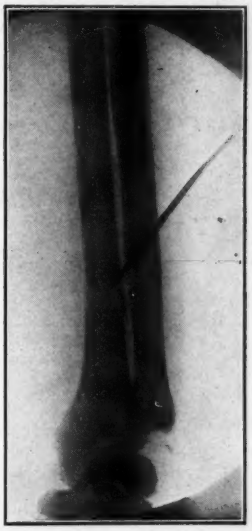

Fig. 2. Case I. Fragments aligned. Pin in place.

This pin should be long enough so that about two inches protrudes beyond the skin surface. Following the proper adjustment of the pin, which

should be of the proper length, so that when the closure is completed the pin will not bear against the skin edge, the muscle and fascia are sewed over the bone. The skin incision is closed in the usual way. If undue pressure of the pin against the skin edges is permitted, the result may be a pressure necrosis of a limited degree, yet enough to prevent a good cosmetic result. Also continued irritation may cause induration with resulting thickening. Neither of these results will occur if one is painstaking while closing the wound.

When the wound is closed, a properly adjusted splint is applied. I use the fiber splints whenever possible, as these may easily be moulded to the parts, and as they permit of frequent inspection of the wound without disturbing the injured member.

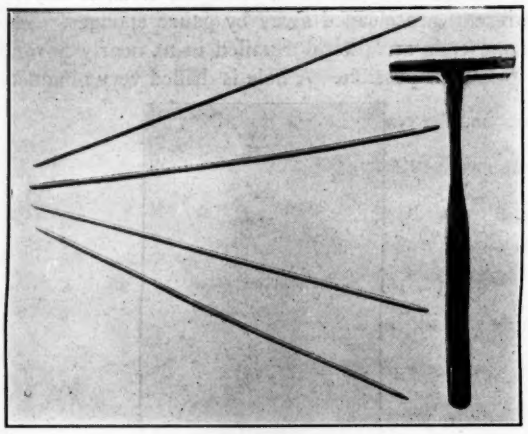

Fig. 3. Steel pins and hammer. The hammer is of solid steel with crenated face to prevent glancing blows.

Gauze dressings are so adjusted about the extending end of the pin as to completely cover it and at the same time protect it from injury. The pin is left *in situ* for three weeks and then carefully withdrawn by using a pair of steel pliers and pulling in a direct line with the pin. This pull is steady, and generally the pin can be withdrawn without great difficulty. In one case, of which the illustrations are shown, a small portion of the distal end of the pin was left behind. This does no great harm, yet it fails in what is most desired—that no foreign material be left behind after the three weeks' period. The usual strict aseptic post-operative care is given these cases as in any open treatment of fractures. The pin method herein described does not appear to shorten the convalescent period, but it has advantages which will later be cited.

In order to illustrate the steel pin method, I have selected three typical cases, one involving the forearm, one the lower limb, and a third the hip. I have selected these cases which were operated upon within twelve hours of injury as fully illustrating its use in three widely distributed locations.

CASE I.—Referred by Dr. N. B. Webber. M. Y., 26 years of age, entered the Notre Dame Hospital, December 12, 1914. One hour before, while he

Fig. 4. Case II. Complete transverse compound fracture of tibia and fibula. Marked displacement and overriding.

was cranking his automobile, the machine backfired. His arm became disabled and he was at once brought to the hospital. He had a typical silver-fork deformity of Colles' fracture of the

Fig. 5. Case II. Note perfect alignment. Four weeks after operation. Arrow indicates level of fibula fracture.

right forearm. A radiograph of the injured part showed the typical driving of the upper segment of the radius into the lower at a point about 2½ inches above the wrist joint (Fig. 1). Immediate open treatment was accepted by the patient.

A clean-cut oblique fracture was found with some slight impaction, but no blood clots and practically no bleeding. The steel pin method was used and the part put up in a palmar fiber coaptation splint. The pin was left *in situ* fourteen days, and then withdrawn. The splint was used for one week more, and then the patient was discharged in supporting bandage and interrupted use of sling for one week more. The results of this method of treatment in this case are shown in Figures 2 and 3, the second showing the pin *in situ*.

The end-result was perfect functional ability.

CASE II.—Referred by Dr. G. S. Bailey, Hillsboro, N. H. Miss M., 26 years of age, entered the Notre Dame Hospital, January 6, 1915. The evening before, while coasting, as she was walking up the hill, a double runner well loaded and coming down the hill at full speed struck her midway between the ankle and knee. There was immediate disability. She was conveyed to her home, where she was examined by Dr. Bailey, who found marked angular deformity of the right leg in the middle third. A wound the size of a lead pencil led down to the point of injury, thus compounding the condition. Dr. Bailey diagnosed the injury as a complete, double, transverse, compound fracture of the right tibia and fibula in the middle third. There was free motion, much crepitation, and total loss of function. The part was neatly put up in a temporary posterior, improvised splint dressing under aseptic precautions, and the patient was brought to the hospital early the following morning. After entrance to the hospital the part was radiographed with the result shown in Figure 4, bearing out Dr. Bailey's diagnosis. Practically no swelling or ecchimosis was present. Immediate open treatment was advised and consent was obtained.

The few blood clots which were present were removed with gauze sponges. The spiculed bone ends were dovetailed into practically normal contour, spicule for spicule, and the steel pin driven home through the tibia. A posterior plaster cast was applied, extending from a point two inches beyond the ends of the toes to the gluteal fold. The splint was permitted to extend beyond the ends of the toes for a distance sufficient to support the bed clothing and thus make it more comfortable for the patient by eliminating the usual cradle. The pin was withdrawn at the end of three weeks, and for three weeks thereafter the part remained supported by the splint alone. This was then dispensed with, a bandage applied, and the patient gradually worked into crutches. At the end of eight weeks she was discharged, walking fairly well, with some conservatism, more due to apprehension than to any physical disability.

Fig. 6. Case III. Complete oblique fracture of surgical neck of femur. Note impaction and deformity.

Fig. 7. Case III. Steel pin in situ. Better reduction, manually, impossible. Good function apposition.

End-result: Perfect approximation, good union, function progressing well toward normal (see Fig. 5). Unforunately, the part was not radiographed while the pin was *in situ*. On April 6, 1915, Dr. Bailey informed me that the patient was using the limb very well.

CASE III.—Referred by Dr. W. L. Biron. Miss L., 23 years of age, entered the Notre Dame Hospital, January 14, 1915. One evening she slipped on the icy walk, falling and striking heavily upon her left hip. There was immediate disability and loss of function, accompanied by more or less pain in the left hip. Removed to her nome, Dr. Biron recognized a fracture of the surgical neck of the femur. She entered the hospital the following morning. Marked crepitation, four inches of shortening, inversion of foot, marked camel hump, deformity of left hip, great trochanter only a little higher than Nelaton's line, marked pain in hip upon passive motion. The diagnosis of oblique fracture of the surgical neck of left femur was confirmed by radiograph (Fig. 6).

The hip was cut down upon by the Murphy goblet incision to allow free access to the part. The few blood clots present were removed with gauze sponges. Under continued traction by assistants upon the leg, the spiculed ends were brought into

Fig. 8. Fracture of tibia and fibula.

as near perfect apposition as possible. It was quite impossible to bring the fragments into anything like normal position because of the massive musculature of the surrounding parts. The steel pin

Fig. 9. Same case as Fig. 8, four weeks after injury. Fragment of steel pin broken off through faulty technic in withdrawing.

was then driven completely through the femur, holding the parts firmly. The wound was closed in the usual manner, properly toileted, and a thick gauze dressing applied. The trunk, hips, and left lower limb were thickly padded with sheet wadding and a spica plaster cast applied, leaving the toes free for inspection. A two-part cross wire cradle was meshed into the cast over the toes to protect them from the bed clothing. The cast was then windowed over the site of operation; and the patient returned to bed in very good condition. At

Fig. 10. Transverse fracture of tibia and fibula with slight comminution.

the end of three weeks the pin was withdrawn (see Fig. 7, showing steel pin *in situ*). The cast was left on for six weeks. A Leonard fracture bed was used for this case in order to facilitate the toileting

Fig. 11. Same case as Fig. 10. Four weeks after injury. Steel pin has been withdrawn. Perfect alignment of tibia. No surface deformity.

and posing of the patient, and thereby give much comfort which otherwise would not be enjoyed. This also greatly reduced the liability to melancholia which is sometimes seen in these long-drawn-out cases. After the cast was removed,

massage and very gradual passive motion were begun. Later the far-reaching method of Cotton, assisted active motion, was begun. Later complete active motion was induced and the patient worked into crutches with a high soled shoe on the right foot. Progress was kept up until at the end of three months she was allowed to bear her weight upon the part and begin real walking.

The end-results were full function of hip joint, one-inch shortening of the affected limb; gradual return to normal function by a slight accommodation tilt of the pelvis.

The accompanying illustrations of cases not reported show marked deformity at the time of the fracture, and the end-results. Illustrations Nos. 8 and 9 show a complete double fracture of tibia and fibula. These are shown for the purpose of exemplifying a case where the distal end of the steel pin broke off and was left *in situ*, while no special harm resulted. Illustrations 10, 11 and 12 show displacement at the time of fracture, and the end-results. When both tibia and fibula are involved, the tibia alone is pinned, the fibula being reduced by dovetailing and thus held in place. Illustration No. 13 shows the end-result of a fracture of the femoral shaft, and is given merely to illustrate the good linear end-result in these cases.

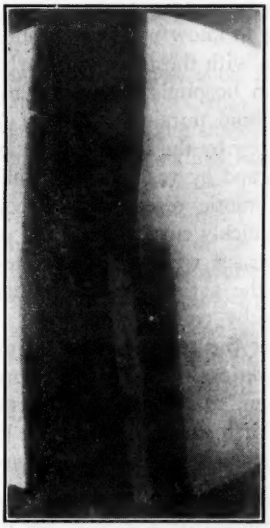

Fig. 12. Transverse fracture of tibia and fibula. Four weeks after injury. Steel pin has been withdrawn.

To sum up this method, I believe that no other method gives as good results except possibly that of Albee, who has acquired such skilled craftsmanship by bone inlay and bone pin work. Although Albee deserves great credit, yet his instruments are expensive, and in some communities this is a drawback. The steel pin method certainly gives equally as good results, but is not as applicable to some conditions, especially where diseased bone is present, as is the Albee method. Undoubtedly, however, the steel pin method will work best many times when other methods fail. The following are some of the advantages of this method:

1. No metal is left in contact with the bone for any length of times.

2. There are no screws to loosen.

3. No foreign body is left behind.

4. There is very little danger of loosening or breaking the pin.

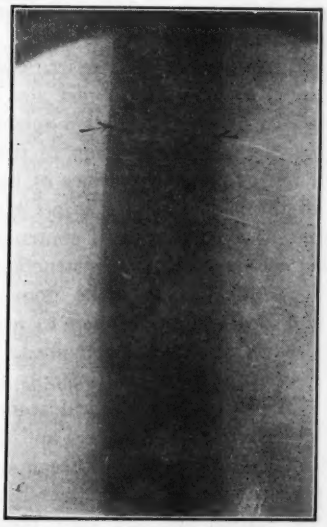

Fig. 13. Transverse fracture of femur. Steel pin has been withdrawn. *Perfect alignment and union with no callus.* Arrows indicate line of fracture.

5. No secondary operation is necessary.

6. The operation may be done on the day of injury, and convalescence is thus materially shortened.

7. The steel pin acts as a drainage vent.

8. The periosteum is not disturbed.

9. Early operative procedure is possible, so that there are no blood clots or hemorrhages.

10. The operative time is shortened.

11. Exposure is shortened.

12. Cotton's method of early passive, assisted active and active motion may be used.

13. There is no very slight swelling of the soft tissues.

14. There is minimum callus formation, and many times there is no apparent edema or induration.

967 ELM STREET.

THE TEACHING OF OBSTETRICS TO NURSES: HOW EXTENSIVE SHOULD SUCH A COURSE BE MADE?

S. J. GOODMAN, PH.G., M.D., F.A.C.S.,
Lecturer on Obstetrics and Gynecology, Grant Hospital School for Nurses,
COLUMBUS, OHIO.

Having had the pleasure of lecturing to the nurses in the training school of the Grant Hospital for a number of years, I have had occasion to make a number of observations relative to the work done by our nurses after graduation and also to compare the work and obstetric knowledge of nurses graduating from other schools.

While I do not wish to appear as criticizing other schools or their teachers nor to cast any reflection upon the work of graduates of other schools, it has seemed to me that some discussion of this subject might not be out of place in advance of the general application of the new nurses' law in Ohio.

To my mind, the main point of contention seems to be whether we desire to give instruction of such quality and quantity as to make good obstetric nurses or to prepare these women to assume the duties of the nurse and doctor combined. It seems to me that many of our training schools are giving instruction more suited for medical students than for nurses. The nurse has her field and the doctor has his. Each has his specific duties in obstetrics. The gist of my argument is that we should make good obstetric nurses and not poor obstetricians. If the doctor is so busy that he must rely upon the nurse to make all the preliminary examinations and perform all the other duties except collecting the fee, he should send an assistant or refuse to take more engagements than he can care for properly. I am willing to assume that many nurses, experienced as well as graduated (and all the good obstetric nurses are not graduates), are better prepared to handle confinements from start to finish than some doctors, but think that this is no reason to educate nurses to do what the accoucheur should do. Would it not be better to educate the medical men?

There seems to be a humorous side to all pathetic things. We are continuously trying to teach the profession that puerperal sepsis is almost always avoidable and to teach the laity to demand aseptic midwifery. Are we then consistent when we preach abstinence from vaginal examinations and at the same time direct the nurse to make such examinations at frequent intervals and report the progress of the labor? Is this not a common type of meddlesome midwifery? Of course, such technic furnishes a scapegoat in the nurse should the patient later show signs of infection. Some obstetricians will say that their nurses make rectal examinations, but I offer the same objection.

What shall we teach our nurses; what should a good course consists of? My ideas are as follows:

In view of the fact that so many nurses refuse to take engagements for obstetric service, I think that we should first of all impress upon them that obstetric nursing is the highest type of service. I am in the habit of dwelling upon the importance of this work so that the pupil nurse will not set her mind against this service before she is mature enough in her training to know what she is thinking about. I impress them with the fact that nearly all surgery is now done in hospitals with pupil nurse attendance; that typhoid nursing will soon be relegated to ancient history by the improvement of municipal water supplies and by vaccine; that pneumonia and the various zymotic diseases will soon be either prevented or quickly cured by the use of sera; that contagious diseases will soon be treated in special hospitals and the patients will be obliged to go to such hospitals by command of law. Then what will be left for the trained nurse to do? Obstetrics. I must confess that society is assuming habits which may seem to bely this statement, but I am sure that our birth rate will always be large enough to afford an income to such nurses as are worthy of hire.

The nurse should then be told the qualifications of a good obstetric nurse. (These qualifications can be applied to nurses in any line of work.) She should be taught tact, loyalty to the doctor, politeness, kindness, cleanliness, willingness to assume any emergency duty in the household, the danger of making diagnoses and prognoses, and above all that *human sympathy* is the most important attribute of a good obstetric nurse. She should be impressed that she is caring for a woman in the most trying and important time of her life and that the peculiar bond of feeling between woman and woman is here most evident and necessary. That is why we have women for obstetric nurses. Tell her that no accoucheur likes to have a nurse who tells all about her bad cases; or a domineering nurse; or a soft nurse; or a poor reader; or one who talks too much or too little; or a diagnostician nurse; or one who is too familiar; or one who is vain, or conceited, or too humble, or sloppy; or one who says that she comes from a fine family and works only for the love of it, while the head of the house hustles to raise twenty-five per week to pay her; or one who quarrels with the servants.

The pupil nurse should have an *elementary* idea of the anatomy and physiology of the female reproductive organs and their relation to conception, gestation, parturition, and the puerperium. She should be instructed about menstruation and ovulation and their relation to each other. She should also have elementary lectures concerning the various commoner affections of the pelvic organs, especially gonorrhea, syphilis, and allied venereal conditions.

To ask her to learn all the histology, physiology, and pathology of these parts and their relations to child-bearing, such as is generally taught to medical students (and forgotten by them) is absurd. If they desire they may read any of the standard text-books at their leisure.

Many beautiful examples, such as the fertilization of the flowers and trees, may be cited to explain in a simple manner the theories of insemination and fertilization. Thus abstruse theories may be avoided and the pupil given a chance to hear something which she can remember.

Asepsis and antisepsis should be drilled into the student in all branches of her work. But nowhere is it so important as in the study of obstetric technic. It is also well to practise what you preach when you demonstrate in the maternity or in the home. The nurse should be taught how to cleanse her hands. I do not feel that I have done my duty until I have taught my students at least three approved methods of cleansing the hands. It is easy for a nurse to cleanse her hands in the hospital where everything is ready for thorough scrubbing and plenty of antiseptics are at hand. But how about the homes, rich and poor, where she is without all these refined aids to asepsis? How often have I seen a nurse who was excellent in the hospital completely at sea when she attempted to make the aseptic arrangements for a home confinement. It is not at all necessary that a student nurse should be burdened with an advanced course of bacteriology in order that she may be capable of using a rice straw brush and a bar of soap to the best advantage. It is this type of "over-education" that makes them forget the commonsense way of doing things.

In order that she may know what every woman ought to know, I think that the pupil nurse should be taught the signs of pregnancy and their relation to the menses, breasts, and vagina. She should be told about the nausea and the vomiting and the commoner anomalies of early gestation. It is well for her to know the various prophylactic methods of securing comfort to the parturient woman. I am in the habit of telling my pupils about the various nostrums concerning which expectant mothers will ask them and explaining to them the uselessness of such things. I tell them about the pelvimeter and explain pelvimetry to them in a superficial manner. But to expect them to get any benefit from a long discourse on the measurements and planes of the pelvis and the size of the fetal head seems a waste of effort. Besides, what good will it do the mother if her nurse is expert in this branch of obstetrics?

Inasmuch as most women, when engaging a nurse, ask her to enumerate just what she should have on hand, in the way of drugs and baby things, it is well to instruct the student along these lines. Do not fill her mind with your own hobbies and thereby get her into trouble when she nurses for your colleague, but tell her of the things that are generally used in such events. And also caution her that she is not to say, by way of criticism, that she was taught to use so-and-so or that Dr. Blank always uses such-and-such.

In these days of aseptic midwifery, nurses are obliged to carry many more articles of equipment than formerly. I tell them that they are to carry such articles as are absolutely necessary for the carrying out of the doctor's orders, in his absence or in an emergency. But to expect them to carry every article of human comfort and convenience, from a hypodermatic needle to a bed-pan, is asking too much.

On arrival at the home, at the time of labor, a nurse should know how to arrange the room and what to do with the friends and children. She should know how to arrange the bed in relation to light, heat, ventilation, stoves and open fires, doors and the means of securing water and other articles needed in the labor room. She should know how to make the patient comfortable and confident and what to do with herself while waiting for the critical moment. She should know how to prepare receptacles from such stock as she may find at hand in the home, and to prepare such instruments and tables as will be needed. In order that a nurse may know which blade of a forceps to hand first to a doctor, she need not be subjected to scientific demonstrations or complex explanations of the mathematical and mechanical mysteries of the use of these tools.

It is important that she knows that she is to use a rubber catheter and not a glass one, and that she knows how to prepare the vulva before inserting the catheter.

That a nurse should know what to do during the confinement is certain, but that she should be able to anticipate every wish, whim, and hobby of each and every accoucheur with whom she comes in

professional contact is expecting too much. She should be taught the fundamental technic in general use and then allow the doctor under whose orders she is working to give her what he considers the fine points to be used in his service. Here again the nurse is to be cautioned not to refer to her didactic teaching in the hospital.

In the puerperium many unfortunate circumstances may arise, and it is in this period that the nurse must use her training and teaching. She should be taught the care of the new-born. She must know how to care for the breasts and the vulva. She must be able to make such notes and keep such a chart that the physician may see at a glance the exact condition of his patient. She must be taught that the smallest detail is important enough to note on the chart. It is surprising how neatly nurses keep a chart while on duty in the hospital and how slovenly they prepare them while on private duty. This is largely the fault of the doctor because he himself does not insist upon the careful charting that would be such an aid to him in anticipating some adventitious condition. This chart work should be strongly impressed upon the pupil nurse. I have noted that the best charts are kept by those nurses who are the neatest and most reliable in their general work. They should be taught to note the appearance of eruptions and discharges and the related symptoms. It is not necessary that she should recognize the importance of these objective symptoms, as that is the duty of the doctor. It is the duty of the doctor to see that the nurse is capable of seeing these things when they are present. One may thus save himself considerable embarrassment at times.

Regarding such complications as post-partum hemorrhage, eclampsia, and puerperal sepsis, little need be said to the nurse. If, as I said before, she uses her eyes, and then promptly reports any untoward symptoms, she has done all that need be expected of her. This might not apply in the case of post-partum hemorrhage, because in this calamity immediate help must be at hand. In this case the nurse herself must, indeed, save the life of the woman. *Every nurse must be taught how to handle a case of post-partum hemorrhage.* But regarding eclampsia, she need only be taught to put something between the teeth to prevent the biting of the tongue and to call the doctor. After that she need only follow the physician's orders. The same in pueperal sepsis. She need not make a diagnosis nor prescribe a treatment. She has only to note the slightest rise of temperature, so that the careful obstetrician will be warned as early as possible. Thus we see that it is not at all necessary to give our pupils long and tiresome lectures on these subjects. And besides, the first accoucheur they work for will disagree with all you have told them and then they are lost. It is a fact that we physicians do not know very much about some of these conditions, especially eclampsia.

It is well to teach a nurse how to handle an emergency delivery. She may be caught with a case before the doctor can get to the house and be forced to deliver the woman by herself. But let us remember that nature is very kind and that "a little knowledge is a dangerous thing." The nurse who knows how to grasp the uterus and to put a clamp on the cord, or tie the cord, will be safer than one who thinks that she is a fair obstetrician.

In view of the foregoing it might be assumed that I am of the opinion that we are teaching our nurses too much, or that I do not believe in thoroughly equipping our nurses for this important service. If anyone has formed such an opinion I beg to state that such is not the case. I believe that we should raise our standard of obstetric nursing to the highest point possible. But my contention regards the method of attaining such perfection. I do not think that we should stuff our nurses full of knowledge that is intended for those who contemplate the practice of medicine. We should aim to teach them such things as will make of them valuable assistants to the accoucheur, and careful and observant attendants for the parturient and puerperal woman. The sweet and kind womanly attributes of these attendants will be of more benefit to our obstetric patients than a head full of technical knowledge. I think that we should give such instruction as will enable nurses to combine the mother instinct with the trained hand and eye. The obstetric nursing service is of woman to woman. Do not spoil a good nurse to make a poor obstetrician.

238 EAST STATE STREET.

THE USE OF BONE GRAFTS.

Congenitally small members can be enlarged by severing the bone with a saw and wedging the fragments apart by inserting a suitable bone graft and fixing the graft by the proper means. Absent head of the femur can be replaced by the head of the astragulus; absent fibulæ substituted by grafts from the tibia, small inferior maxilla enlarged by the insertion of a piece of rib, et cetera. The acetabulum can be enlarged by pegging a graft to its upper surface, or new shelves for dislocated femora made by the same method.—W. G. STERN in The *Cleveland Medical Journal.*

THE VALUE OF THE ORGANIZATION AND INSTRUCTION OF FIRST AID CORPS ALONG RAILWAY LINES.*

H. A. LUCAS, M.D.,
ALBANY, N. Y.

When I entered upon my duties with the New York Central Company at West Albany two and a half years ago, I soon noticed, and thereafter became forcibly impressed with, the lack and decided need of an organized and well equipped first-aid department.

I learned from personal investigation that, although there were between four and five thousand men employed in the shops and yards, less than a dozen understood first-aid work even to a small degree.

I was informed that some years previously a certain employee, then no longer in the employ of the company, had gained quite a reputation as a first-aid worker, and upon the memory of him seemed to rest all that was left of first aid.

The general opinion was that an organization of men trained for emergency treatment of injured fellow workmen was not only something to be desired, but was absolutely necessary. It had happened that, in many cases, infection developed in small wounds due to neglect on the part of the employees and their ignorance of the importance of careful attention to them.

Also men came to me almost daily to ask if I could do anything to remove ugly scars that had resulted from wounds which had been crudely dressed with wads of cotton and bound up with anything that happened to be handy from a handkerchief to a stray bandage which a fellow workman happened to have in his pocket.

Frequently the men would decide for themselves that an injury did not amount to anything, with the result that a week or more later I would be called to attend a wound in which all the symptoms of infection had developed; or possibly a badly swollen hand or foot in which a fractured metacarpal or metatarsal was discovered.

I remember one workman who was struck on the nose by a flying rivet and thought the injury of little consequence until ten days later when he came to me, saying that he could not breathe very well through one nostril and something seemed to grate in it. I found a fracture.

"I did not think it amounted to anything" was the usual explanation of men in whose neglected injuries infection had developed. Others, especially foreigners, quietly departed to their homes without making any report of injury, and nothing was heard from them until an attorney appeared with a claim on their behalf.

Malingering and a desire for opportunity to sue the company had become too prevalent. As a rule the first question asked me was not, "Am I badly hurt?" but, "Do you think I will get any money from the company?"

These circumstances and others indicated want of cordial understanding and intelligent cooperation between the men and the company surgeon's department.

There was manifest need of impressing upon the minds of the workers the fact that the company surgeon was their friend, like themselves employed, charged with the special duty to give them prompt care when accident might befall them, and always ready and eager to perform that duty. It seemed reasonable to me that this could best be done through men selected from the employees themselves, who had the good will and confidence of their associates, and could be trained to serve efficiently during that often critical time before the doctor can arrive.

A meeting was called of all those interested in first-aid work. There was a good response and those who came took up the work with eager willingness. A few men were picked from each shop and the yards and a first-aid class organized.

Regular meetings were held and the men instructed and drilled in the different details of first-aid work. The members elected two officers known as *chief first-aid men,* one for the upper department and one for the lower, to whom any questions regarding cases or conditions might be brought.

In order to prevent many workmen crowding about an injured man, all offering different suggestions as to treatment, it was made known throughout the shops that the official first-aid men would wear a service button and that they were to be the only men to be called upon to care for the injured before the surgeon's arrival and that their directions were to be carried out without question.

So the first-aid work has been for some time well systematized. When an employee is injured, while word is being sent to the surgeon's office, the first-aid men give him such emergency treatment as may be necessary. If his injury is severe, he is removed to the emergency operating room which the company has constructed and equipped in the shops. There first-aid men prepare instruments and appliances that are likely to be required according to instructions which they have received.

*Read at the 24th annual session of the New York and New England Association of Railway Surgeons.

The members of the first-aid corps take keen interest in their work, and are proud of their position, and their fellow employees highly appreciate their services.

Recently the manager of the restaurant in the Albany depot asked if he might not be permitted to join the corps, as he had heard of its work and felt that the restaurant ought to have a representative. Of course, he will be made a welcome member. It is my firm belief that the various railroads should encourage the company surgeons to pick representatives not only from employees in the shops and yards, but also from station employees and train crews for instruction in first-aid work, so that emergency assistance may be readily available wherever even the remotest possibility of an accident exists.

One of the great indirect values to be gained from the extension of this work is to the workmen, who are constantly reminded by first-aid men that "Safety First" is to be thought of always. To give such admonition is part of the work of the members, as I have impressed it upon them that they can do even more good by making their comrades careful to avoid injury than by caring for them after they are injured.

The men have been taught never to neglect even a seemingly slight injury, and never to apply or permit to be applied to a wound a surgically unclean cloth, but to go directly to or call for a first-aid man who knows what to do and has the proper materials. In cases of serious injury the intelligent work of a first-aid man may avail to save a life during the short time that it takes the surgeon to reach him.

The value to the company of this service is manifold. It strengthens loyalty, since the men are made to feel that their welfare is a concern of their employer. It minimizes the duration and may in some instances serve to diminish the extent of disability. It prevents malingering.

The value to the surgeon is best known by one who has found himself suddenly placed in a situation where none but untrained hands have cared for his patient until his arrival. In many instances just a little instruction in the use of willing but untrained hands would have been a godsend to the company surgeon for the success of his after treatment. To know that in case of injury to any of the men placed under his care there are always immediately ready those who know what must or can be done to mitigate the effects is greatly conducive to a surgeon's ease of mind. And it is of great assistance to him to be intelligently informed about the nature of an injury when he is called, usually by telephone.

While conditions are particularly favorable for the establishment and maintenance of a first-aid system at the great shop and yard centers of which West Albany is one, it should be possible to extend ramifications from those centers along the lines of every railroad system, so that in case of accident anywhere it would never be necessary to go as far for a trained first-aid man as for the nearest surgeon. For all the reasons which are so clearly obvious that they have been but briefly mentioned here, the efforts of all concerned should be concentrated upon the extension of the first-aid service.

CANCER OF THE SKIN.*

SIGMUND POLLITZER, M.D.,
Dermatologist, Post-Graduate Hospital and German Dispensary,
NEW YORK.

Cancers of the skin offer few difficulties in the way of recognition because, unlike those of the viscera, their location brings them directly under the eye of the observer.

The dermatologist recognizes two main types of cancer of the skin: those that originate in the viscera and affect the skin secondarily, and those that originate in the skin itself. Cancer of any organ may lead to metastatic deposits in the skin. These secondary cancers occur under three clinical forms: (a) the nodular, (b) lenticular, (c) cancer *en cuirasse*. All these forms of secondary cancers are rare because with an actively proliferating cancer of an internal organ the death of the patient usually supervenes before deposits occur in the skin.

In the nodular form, the deposits are located in the cutis under the epidermis and may be felt as firm, round, or irregular nodules over which the surface is movable and normal in appearance. In the course of time the cutaneous deposits become confluent with the epidermis, which may later break down and ulcerate. The nodular form may occur on any portion of the integument, but is most often seen on the upper part of the trunk.

Lenticular cancer is usually secondary to cancer of the breast, and is the result of direct extension from the primary growth by way of the lymphatic channels. It is most frequently seen associated with recurrent cancer of the breast after operation. The nodules are pea-size, hard, and shining, with a waxy reddish or bluish-red color. In can-

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cer *en cuirasse,* we have the same kind of secondary infiltration by way of the lymph spaces, and in addition an involvement of the lymphatics of the skin, so that the entire surface assumes a board-like hardness and is dotted with smooth, shining papules. Itching is often a prominent symptom. The process is always secondary to cancer of the breast, and the view of some authors that this form may arise primarily in the skin is, in my opinion, erroneous; the primary breast tumor may be so small as to escape detection under the tensely infiltrated skin. The cancerous infiltration may involve the greater portion of the thoracic wall, front and back. Edema of one or both arms invariably follows, formidable ulcerations, fungous growths, and crusting may develop, and death usually occurs within a few months, or the patient may survive a year or two.

Primary cancer of the skin—epithelioma—is by no means a rare disease, and there is reason for believing that its frequency is increasing. Among nearly 700,000 cases of skin diseases of all kinds, recorded by the members of the American Dermatological Association, there were 8,768 cases, or about one and one-quarter per cent. of cancerous affections. Dividing the observation period of 34 years into three periods of 14, 10, and 10 years respectively, we find during the first period of 14 years an average of 87 cases of cancer per 10,000 patients; during the second period of 10 years, an average of 109 cases per 10,000; and during the last ten years, an average of 190 cases per 10,000. That is, the incidence of cancers of the skin in dermatological practice has more than doubled in the last period as compared with the first. These statistics, based on diagnoses by trained observers in the larger cities throughout the country, have a distinct value. The disease is more frequent in men than in women, in the ratio of about two to one. Like visceral cancer, it occurs after middle life, though cases have been noted as early as the age of 10 or 12. It is more frequent in cold climates than in warm, and relatively rare among the dark-skinned races. About 75 per cent. of all epitheliomata are located on the head (mainly the face), and half the remainder on the hands.

For practical purposes we may divide epitheliomata into three classes: (a) superficial or discoid, (b) deep or nodular (c) hypertrophic, papillomatous or fungating. A rare and unique form of epithelioma, not included in this grouping, deserves a few words. I refer to that form known as Paget's disease of the nipple, which begins as a dermatitis simulating an eczema of a scaling moist and crusted variety. The disease is most frequent on the breasts, but cases have been observed on the scrotum, perineum, thighs, and abdomen. The affection may persist as a superficial process for many years, as many as twenty, but sooner or later the deeper structures become involved—in the case of the breast, the mammary gland—the neighboring lymph nodes become infiltrated, and the case runs the usual course of a visceral cancer. The diagnosis is based on the chronicity of the disease, its resistance to treatment, the deep red color of the denuded, granulating, and oozing surface, which is often covered in part with thick, adherent crusts, and the sharply marked, slightly raised circinate border of the lesion. Radical operation as soon as the diagnosis can be confirmed by the microscope offers the best chance of cure.

The superficial or discoid form of epithelioma begins as a minute, pale red, or fawn-colored, flat-topped or rounded papule, which slowly increases in area, and after attaining the diameter of a pea shows a slight depression in the middle, so that the border appears slightly raised and often has a shining, pearly appearance. In the course of time —it may be years—the surface epithelium of a part of the lesion is destroyed—a slight trauma is often the immediate cause of the surface injury—and a crust is formed. This crust persists, forms again when it is removed, and the little ulcer shows no tendency to heal. Gradually the lesion becomes larger, encroaching more and more on the neighboring tissues, and the ultimate result may be the most frightful destruction, involving the entire face, ending in extension to the lymph glands and general carcinosis, if life has not sooner been terminated through hemorrhage resulting from rupture of a large artery or vein.

Sometimes the entire lesion is markedly elevated, while the central ulceration extends deeply into the underlying tissues, producing a crateriform ulcer. Sometimes the epithelioma is for many years preceded by a small scaling area, on part of which a distinct crust may develop, and the lesion will then present the ordinary appearance of a flat epithelioma and run the usual course.

A modification of the discoid variety of epithelioma appears in the form called by English writers rodent ulcer. This form differs from the discoid mainly in limitation of the process to the upper portion of the skin, though extension to deeper tissues and involvement of glands is not wholly unknown. As a rule, however, rodent ulcer persists as a superficial local process for an indefinite period. Cicatrization of a part of the ulcer occasionally occurs, while the lesion spreads in new directions, the ulcer thus acquiring an irregular

serpiginous outline. The firm, scarcely raised border, the hard, irregular floor, showing no granulations, and the scanty secretion, are the main characteristics. Rodent ulcer occurs most frequently at or near the margins of the lower lids and on the sides of the nose and the cheeks.

In the deep or nodular form of epithelioma, the process begins as one or more nodules located distinctly under the epidermis. It may occur as a rounded or irregular elevation of the skin, or the level of the surface may be normal at first. With the growth of the tumor, the epidermis becomes involved, and presently breaks down into an ulcer, with the characteristic appearance of an epitheliomatous ulcer. The ulceration, however, is deeper, and the extent of the new growth around the ulcer is greater than in the discoid variety.

Hypertrophic, papillary, or fungating epithelioma is a clinical variant of the superficial form, in which an exuberant outward growth takes the place of the usual ulcer. This exuberant growth may soon break down and leave the ordinary appearance of an ulcerated epithelioma, or the hypertrophic tissue may persist as a cauliflower excrescence which becomes denuded of its epidermic covering and remains as a bright red surface covered with a viscid seropurulent secretion.

It would manifestly be impossible within the limits of this paper to attempt to describe all the variations in origin, appearance, and course of epithelioma. I wish particularly to emphasize the fact that the course of an epithelioma can never be predicted. A small superficial lesion may remain stationary for years, and never cause more than a slight disfigurement; or, on the other hand, it may suddenly begin to grow rapidly after years of quiescence. Other lesions of similar appearance may grow rapidly from the start. In the deep-seated epitheliomata, extension is usually rapid from the beginning, and glandular involvement often occurs early. Glandular involvement is more apt to occur early in the case of epitheliomata located on the lip and on the sides of the face immediately in front of the ear. Superficial epithelioma, rodent ulcer, and the exuberant forms are less likely to lead to metastases than the deep nodular form. Epitheliomata located in regions particularly well supplied with lymphatics are most apt to produce metastases, especially when the affected region is one normally subject to great alternations in pressure through muscular action; hence the great danger from growths on the lips and tongue.

The diagnosis of epithelioma is rarely attended with difficulty. Any persistent crusted or ulcerated lesion of the skin, however small or apparently insignificant, should be regarded with suspicion. Any persistent patch of roughness or scaliness at the muco-cutaneous junctures should be looked upon as a possible beginning epithelioma. The hard, nodular, waxy or pearly border, the firm nodular base, the tendency to bleeding after a crust has formed, the history of a gradual development, of a previous scaling or horny lesion, or of the previous existence of a fleshy mole at the site of the lesion—these are sufficiently characteristic features when occurring in persons at or after middle life, to arouse at least a suspicion of malignancy, a suspicion which will readily be confirmed or allayed by the expert or by the microscope.

Two conditions with which epithelioma is most often confused are lupus and syphilis. Aside from the obvious clinical differences, it should be borne in mind that lupus invariably begins in childhood or adolescence, while epithelioma is a disease of advancing years. Epithelioma sometimes develops in an old patch of lupus, but this is extremely rare, and in such a case suspicion may be aroused by a marked change in the previous appearance of the lupus. An ulcerating tubercular syphilide will have none of the features characteristic of the margin and the floor of an ulcerating epithelioma. On the other hand, it must be remembered that the syphilitic is not immune to epithelioma, and a positive Wassermann reaction may serve to confirm an error in diagnosis. I have seen a syphilitic treated for a long time by salvarsan and mercury on account of an epithelioma of the lip. The patient's life might have been saved but for the loss of valuable time due to the mistake in diagnosis.

In considering the etiology of epithelioma, one factor stands out preeminently. There is no question of the rôle of trauma and chronic irritation in the causation of the disease. This influence is seen in the development of epithelioma on the basis of chronic skin disease like lupus, syphilitic ulcers, and even psoriasis. Epithelioma occurs on the tongue and cheeks where a rough or sharp tooth has for years kept up an irritation, or where a patch of leucoplakia has played a similar rôle; it occurs on the penis, where an adherent prepuce or a phimosis has been the irritating factor. Warts, moles, senile or arsenical or *x*-ray keratoses, with their likelihood to extraneous irritation are a frequent point of origin for epitheliomata. It occurs on the scrotum in chimney-sweeps and in workers in tar and paraffin. Since the passage of a law forbidding the chimney-sweep from climbing through chimneys, this form of epithelioma, once quite common in England, has become practically unknown. A striking evidence of the rôle of chronic irritation in the

production of epithelioma is afforded by the frequency of this disease on the thighs and abdomen of the natives of Kashmir. It is the custom in that country to carry small fire boxes (little stoves) suspended by a cord from the neck in such a way that the box rests on the thigh or abdomen. In the Kashmir Mission Hospital out of 1,189 cases of epithelioma, 848 (71 per cent.) occurred on the thighs or abdomen.

These examples are sufficient to show the rôle of irritation in the production of epithelioma, and they point to an important consideration in the prophylaxis and treatment of the disease. Every source of persistent irritation, especially in the aged, should be avoided or removed. The skin should be kept free from irritating foreign bodies by the frequent use of a bland soap. The services of a dentist must be invoked to avoid irritation from bad teeth. Repeated irritation of a mole, whether it be from the pressure of the eye-glasses, or of the corset, or from the razor, must be avoided, or if it cannot be avoided the mole should be removed. But it is not only these extraneous or accidental sources of irritation of a keratosis or a mole that must be guarded against. The fashion of removing "facial blemishes" in women by means which involve a direct risk of producing epithelioma is quite common. I have seen a number of cases of epithelioma develop after the treatment of moles by means of electrolysis, carbon dioxide snow, or chemical caustics. Any method of treatment of a mole which does not provide against the possibility of leaving a remnant of the embryonal epidermic inclusion in the cutis is to be condemned in the strongest terms. The atypical epithelial naevus-cells left in the scar tissue produced by the treatment are subjected to chronic irritation by pressure of the scar and are likely to undergo malignant proliferation. A mole should not be touched, or it should be removed radically. A mole which for any reason shows evidence of irritation or growth should be removed radically at once.

The same reasoning may be applied to the treatment of an already developed epithelioma. It is rather unfortunate that these lesions are always painless and for that reason are apt to be neglected by the patient. It is true that epitheliomata are often of extremely slow growth, but, as we have said, the course of an epithelioma can never be predicted. It should therefore be removed as soon as the diagnosis has been made. The need for prompt action is especially urgent in the case of epithelioma of the lips and tongue, and of the glans penis and the vulva; and the action should be radical. Hundreds of cases of successful treatment of epithelioma in these regions by the *x*-ray or by radium have been reported; thousands of cases of unsuccessful treatment have not been reported. Tickling an epithelioma of the lip with the *x*-ray is a dangerous game. At best, the method is one for the expert.

In regard to epithelioma in other regions, the one thing to remember is that whatever the method of treatment employed it should be thorough. When the lesion is small and favorably located, a wide excision with the knife is the best treatment. Unfortunately, however, epitheliomata often occur in regions in which an excision is impossible without producing great deformity, as at the margins of the lids, the tip of the nose, etc. In these regions, the best results, both as to cure and cosmetic effect, are obtained by the use of one of the physical or chemical destructive agents. Epitheliomata in these regions are generally of the slow-growing and relatively harmless variety. The *x*-ray or radium properly employed, the quicker method of treatment with a chemical caustic preceded by thorough curettage, give excellent results. But whatever method of treatment is employed, thoroughness in the application is the keynote of success. The neoplasm must be eradicated at a single treatment. The chances of accomplishing this result will depend entirely on the size of the lesion, and it is in this regard that the heaviest responsibility rests on the physician who first sees the case. Every epithelioma at its inception is a microscopic object; it is a minute object when it first attracts attention. The physician who fails to recognize an epithelioma in its early stage, or who trifles with it after he has made a diagnosis or even suspected its true nature, is guilty of a serious dereliction or assumes a grave responsibility.

51 EAST SIXTIETH STREET.

HYSTERIA AND PELVIC DISEASE.

The connection of hysteria and pelvic disease, aside from the ancient theory of womb causation, is that of any neurosis and any disease. Hysteria may coincide with pelvic disease, it may modify pelvic disease, and it may be modified by pelvic disease. The numerous mutilations performed for the cure of hysteria have no justification. Repeated analyses have shown, in hundreds of cases, there was no favorable effect and any temporary benefit which might be secured was due to enforced rest. The old view of hysteria, however, still leads to the lucrative operation.—H. C. B. ALEXANDER in the *N. Y. Medical Journal.*

TRAUMATIC RUPTURE OF THE LIVER.*

H. G. STETSON, M.D.,
GREENFIELD, MASS.

Rupture of the liver is fortunately not so very frequently met with, although relatively it stands next in frequency to rupture of the intestine. Of injuries to the solid abdominal viscera, liver, spleen, kidney, and pancreas, the liver heads the list Its causes are many and may be both direct and indirect. Being caught between the bumpers of freight cars or run over by heavy wagons, blows upon the lower chest or upper abdomen or in the loin, falls from considerable heights, striking upon the buttocks, forced squeezing or acute flexion of the body, as in elevator accidents, or when great weight is suddenly thrown upon the body, are causes given by those describing this injury. Its location, situated as it is between the somewhat unyielding ribs in front, laterally, and behind, the rather tense, strong diaphragm above, and the rigid spinal column behind, together with its heavy weight, make the liver peculiarly susceptible to rupture when sufficient force is applied directly against it.

The location of the rupture is most frequently seen in the right lobe; those who have taken the pains to classify the location tell us that the proportion of right to left lobes is as six to one. The superior surface seems to be more often involved than the inferior, and, again referring to the statistics, we find the proportion to be two to one in favor of the superior surface. The extent of the wound in the liver is very variable, perhaps a small nick an inch in depth on the anterior margin, perhaps the liver has been completely torn apart, and all grades of injury between these two extremes are met with. Occasionally the torn surface involves the hepatic, the cystic or the common duct, as well as the liver substance. The injury may be a rather rough linear tear, it may be a very ragged linear tear, or it may be a very irregular wound of great variance in size. It not infrequently is complicated by wounds of other viscera, such as injury to intestine, stomach, kidney, diaphragm, or lung, which, of course, makes a primarily dangerous condition proportionately more serious.

Other forms of liver injury are chronicled, such as rupture of the substance of the organ, the injury not reaching the capsule, a hematoma of varying size resulting; or, again, separation of the capsule from the parenchyma with a resulting similar collection of blood beneath the capsule. For all practical purposes in this paper these may be regarded as surgical curiosities, refinements of diagnosis likely to be attained by very few.

Rupture of the liver of whatever extent is immediately accompanied by profuse hemorrhage, the amount depending upon—first, the extent of torn surface exposed, and second, upon the number and size of the large vessels severed. The symptoms, therefore, can be divided into those due to hemorrhage and those due to injury to the liver.

Pain is at once complained of and is severe and is not infrequently accompanied by evidence of shock very early and this is particularly true, of course, if the rent in the liver be of large size. The pain is usually located in the upper right abdomen, perhaps in the right and left upper abdomen, occasionally it may be more general. Later, pain in the right shoulder is frequently complained of, and one of my cases complained bitterly of pain in the left shoulder. Anything which increases the intra-abdominal tension increases the pain. It is, therefore, made worse by deep breathing, coughing, vomiting, hiccough, or deep abdominal palpation. Breathing is apt to be thoracic in type, thus avoiding the downward movement of the diaphragm and the consequent pressure upon the damaged liver. After all, pain is very variable, depending somewhat upon the individual. Patients with rupture of the liver have walked several blocks, with not intolerable discomfort, have allowed several hours to elapse without thinking their injury sufficiently serious to seek medical aid. Tenderness on pressure over the upper abdomen is a fairly constant symptom and is perceptible at once, becoming more noticeable later. Rigidity of the abdominal wall is, as a rule, not marked, but is present within two or three hours. It does not, however, approximate in severity the muscular rigidity seen in inflammatory affections of the peritoneum. It is usually more marked upon the right side and may be entirely confined to that side.

Nausea or vomiting are not, as a rule, common symptoms and are not in any way characteristic of the injury. Hiccough is sometimes seen, but is in no sense pathognomonic; when seen it is more likely to be due to some complicating injury, particularly of rupture of the diaphragm.

Finsterer has observed marked bradycardia in six out of eleven liver injuries and believes it to be a symptom of value in differentiating the character of the abdominal injury sustained. This symptom, he believes, is present somewhat early and is transient, often disappearing before or soon after the patient enters the hospital. This observation has not been verified, however, by a sufficient

*Read at the 24th annual session of the New York and New England Association of Railway Surgeons.

number of others to make it of absolute diagnostic value.

The most marked symptom and the one which is by far of the greatest importance at the time of and immediately following the injury is the evidence of intra-abdominal hemorrhage. Pallor, increasingly rapid pulse, with lowered tension, thirst, and later restlessness, sighing respiration, and not infrequently delirium, is the evidence presented of this alarming condition. The symptoms of hemorrhage may appear at once or may be much delayed, not being definitely recognized for perhaps two or three or more hours, and even then increasing very slowly, or perhaps stopping altogether if by chance the damage done to the liver be sufficiently slight for clotting to occur and so bringing about a cessation of the hemorrhage.

This happy termination of so serious a state is, unfortunately, not often seen. The condition is usually a progressive one and steadily, with greater or less rapidity, grows worse until terminated by operative relief or death. Should hemorrhage cease, however, after continuing for a few hours, we are likely to see continued pain, due principally to the irritant effect upon the peritoneum of effused blood and bile. Some elevation of temperature is to be expected from absorption of fibrinogen of the intra-abdominal collection of blood. Bile escaping from the liver substance is usually sterile, and while it may cause a fibrino-plastic peritonitis, seldom produces the dangerous type of septic peritonitis. On the other hand, bile escaping from a previously infected bile duct or gall bladder torn at time of injury, will very quickly inaugurate a rapidly fatal peritonitis.

Usually after three to five days moderate jaundice will occur, due to absorption of bile by the peritoneum.

If hemorrhage has been sufficient there may be found some dullness on percussion in the right flank, due to accumulation of blood in the right kidney fossa.

The diagnosis of ruptured liver is oftentimes far from easy to make. Not infrequently the best diagnosis that can be made is that of a severe abdominal injury, causing marked intra-abdominal hemorrhage and demanding immediate laparotomy, and the true state of affairs is recognized only when the abdomen is opened. The history of the injury, the manner in which it was produced, should often be of substantial aid in assisting us to decide upon the pathological condition present. Signs of hemorrhage, pain in the upper right abdomen and not infrequently in right shoulder, thoracic respiration, increased pain on deep breathing or coughing, and this increased pain fairly well localized in the region of the liver, the presence of these symptoms, together with the absence of nausea or vomiting, abdominal distention and bloody urine, should make us at least suspicious of liver rupture. We should at least be able to say that such a thought had not entirely escaped us.

And what are the results of this serious accident? Rupture of the liver has been completely recovered from, even when quite extensive, without any operative interference. Of that there is question. It is estimated that of those cases not operated upon, something like 85 per cent. die. Of those operated upon at some stage of their illness, the mortality appears to be from 40 per cent. to 45 per cent. As in other acute abdominal emergencies the best results almost invariably follow early operative interference. Shock is no contraindication to operation, as shock is due almost entirely to hemorrhage and will continue until the hemorrhage is controlled or until death ends the scene. Therefore, laparotomy is indicated at once unless the patient is practically dying. Nature does not deal as kindly in hemorrhage from the liver as in hemorrhage from the vessels of the extremities; there is no collapse of the vessel walls here to aid the formation of a clot, as the liver tissue prevents it; therefore, hemorrhage from severed liver tissue is extremely likely to continue unless it be mechanically stopped.

Eisendrath has stated in his most admirable paper on "Traumatic Rupture of Abdominal Viscera," that of 143 reported deaths from rupture of the liver, 59 died from hemorrhage. Our duty in these injuries is, therefore, plain. We must prevent this dangerous loss of blood at the earliest possible moment and to do this early laparotomy is demanded. If rupture of the liver is suspected, or if we are only moderately sure of some serious injury in the neighborhood of the liver, we may employ any one of the so-called liver incisions, selecting the one perhaps with which we are most familiar, making sure that our opening is sufficiently extensive for all our needs. Section of the abdomen is almost universally followed by a free discharge of blood, and this may be arterial and indicate that free bleeding is still going on. But the blood is nearly always venous and dark; in fact, bleeding from the liver is practically always venous. Without making any attempt to clean out this blood, the hand should be rapidly pushed over the superior surface of the right lobe of the liver as far as the suspensory ligament and to its extreme right margin—nothing being found, it should

then pass to the under surface, coming inward again to as near the longitudinal fissure as possible. The left lobe should be searched in the same systematic, thorough way. With this hurried but complete and thorough examination of the entire surface of the liver with exception of the posterior margin, it would be rare indeed if any rupture sufficiently large to produce bleeding of moment should be missed. The search should not stop with the discovery of a single rupture, but should continue; the whole liver being carefully gone over, as it not infrequently happens that two or more rents are found, although all may not be actively bleeding.

Once found, the tear may be packed with gauze and then attempts made at cleansing the abdominal cavity. Bleeding from a ruptured liver substance is ordinarily easily controlled by single packing, owing to the very low blood pressure in the hepatic veins, and when the wound is packed with moderate firmness, oozing of any amount seldom occurs. Should bleeding persist, however, and moderately firm packing found to be unavailing, or should it be necessary or desirable to clamp and ligate actively bleeding vessels, we should not forget the method of Pringle, of passing the forefinger through the foramen of Winslow and grasping the portal vessel between it and the thumb. This is said to produce most excellent temporary hemostasis, sufficiently complete to enable the operator to find and clamp a persistently bleeding vessel and perhaps to pack or possibly to suture the torn liver. If it is possible to do so I believe that all liver injuries should be sutured. Fairly close apposition of the torn surfaces should effectually stop bleeding, and this being accomplished, the abdomen can be washed out and closed without drainage. Closure of the torn liver substance may be carried out with a large, round needle carrying a No. 1 or No. 2 catgut suture, using an over-and-over stitch, being careful to take fairly deep bites on either side of the tear. Many injuries of the liver, however, will be found impossible of suture, due largely to their situation; most of those, for instance, situated upon the superior surface are so inaccessible as to make any attempt at closure by suture practically out of the question, and all efforts to accomplish such serve only to increase the size of the rent. This is also true of those injuries situated far posteriorly on the under surface. For these there remains nothing but moderately firm packing. It has been proposed to cut the suspensory ligament and the right lateral ligament and thus be able to rotate the liver, bringing into view more of its superior surface and making its inferior surface more accessible. To sever the suspensory ligament, however, is much easier said than done, and in the ordinary man would require scissors some eight or ten inches long, and to reach the right lateral ligament even longer instruments would be required, and few operating rooms possess scissors of this length.

It has also been proposed to make a large superior flap by cutting through the ninth, eight and seventh ribs, and by so doing bringing into view a much larger portion of the liver and making it much more easy of approach. In doing this, however, there is danger of entering the pleural cavity, which serves to complicate rather than simplify matters.

Hemorrhage controlled either by suture or packing, the abdomen may or may not be washed out before closing. There seems to be no danger in closing the abdomen at once without any attempt at the so-called toilet of the peritoneum. The most that happens is a temperature varying from 100 to 101 or more for seven to ten days following, due to the absorption of old blood remaining in the abdominal cavity, and this sometimes creates a certain amount of anxiety for a time, fearing that it may be due to other and less friendly causes.

If packing has been the means adopted for controlling hemorrhage, there should be no haste in its removal. No harm results in allowing it to remain for five, six, or seven days; always provided that no signs of infection are in evidence. And, as we all know, packing in a newly made wound is removed with much less traumatism and discomfort at the end of six days than at the end of three days. Once removed, a light packing may be replaced to the bottom of the cavity and this changed every two or three days until the wound has entirely healed. As has been said, bile will usually be found upon the dressings within a few days, draining from the torn surface of the liver.

Other means of checking hemorrhage have been recommended and carried out, such, for instance, as circular suture of portions of the bleeding surface, through and through suture of the body of the liver, live steam, and the actual cautery, and some of these aids may be necessary at times. The actual cautery, while it may be useful in controlling primary hemorrhage, certainly increases very much the danger of secondary hemorrhage when the slough of the burn is cast off, and for this reason should not be employed, if other less objectionable methods will suffice.

Loewy, Mauclaire, and Boljarski have separately used omental grafts, both experimentally and clinically, and seem to have obtained very satisfactory results. Sections from the omentum have been

sutured over the torn surfaces of the liver or been pushed into the rent and the edges of the tear closed over the flap with the result that complete closing of the wound has occurred much sooner than when allowed to granulate, sometimes even allowing the abdomen to be closed without drainage.

Better results can be obtained and will be obtained in the treatment of ruptured liver, but they will not be obtained until we recognize the possibility of such an accident at an earlier moment, and on such recognition take immediate steps to mechanically control the resulting hemorrhage with as little disturbance to the patient as possible.

CASE I.—H. S., 22, a brakeman, was caught in a railroad collision on October 3, 1902; when seen half an hour after the accident he complained of severe pain in the right upper abdomen and was unable to stand. Was transferred at once to hospital and given morphine for immediate relief of pain. Shock not marked at first, but came on rather slowly; complained of severe pain in the right upper abdomen, increased on deep breathing, and also of pain in right shoulder. Vomited two or three times within six hours after his accident. Pallor became very marked after three or four hours, apparently out of proportion to the amount of shock. Examination six hours after accident showed patient in marked shock with great pallor, rather tense abdominal muscles, particularly upon the right side; no dullness in flanks; no tympania, and presenting marked tenderness in region of gall-bladder. Laparotomy seven hours after receipt of injury, by Dr. C. L. Scudder of Boston. Abdomen full of dark, venous blood and blood clots. Further investigation revealed a large rent in the upper surface of the right lobe of the liver from which there was free bleeding. This wound was packed with gauze and abdominal wound closed up to upper angle from which packing protruded. Salt solution was given intravenously twice during the next few hours, but with no permanent benefit, death occurring eight hours after his operation.

In this case no hemorrhage occurred from the wound in the liver after it was packed, but the amount of blood lost previous to his operation was more than he could stand, and he died from acute anemia. He should have been operated upon as soon as he was admitted to the hospital.

CASE II.—H. B., schoolboy, 14, while coasting, was thrown from his sled against a telephone pole. He complained at once of severe pain in upper right abdomen and presented the appearance of one having a serious abdominal injury. He was admitted to the hospital about three or four hours after the receipt of his injury, where I saw him with the attending physician, Dr. C. F. Canedy, two hours after his admission. At that time his abdominal pain was less, but he complained severely of pain in his *left* shoulder. (He had had some morphine previous to starting upon his journey to the hospital.) He looked rather anemic and his general appearance was not good. His pulse was 110, and this had increased from 90 since his admission and was of fair quality. Since his entrance to the hospital he had voided six ounces of clear, normal urine. There had been no bowel movement and no flatus had been passed. His abdominal wall was moderately rigid and was retracted. There had been no nausea or vomiting. There was slight tenderness over the liver. A diagnosis of probable rupture of the liver was made and immediate laparotomy was done. On opening the abdomen a large amount of free blood escaped; after some difficulty a large rent was found upon the anterior surface of the lower portion of the liver just to the left of the gall-bladder in the quadrate lobe. This was hurriedly packed as firmly as possible and the abdomen closed with the exception of the drainage opening, the patient leaving the table in rather poor condition. For two or three days his condition was exceedingly critical and it seemed impossible that he would live more than a few hours, but he then improved somewhat. Later, however, his pulse became more rapid and of less volume; he became confused mentally; somewhat jaundiced; frequently vomiting green, watery fluid, finally dying on the thirteenth day of his illness, apparently of cholemia. At no time had he any definite symptoms of peritonitis, his temperature seldom went above 100°, and he drained bile freely from his wound. His packing was removed on the third day and he had no hemorrhage at that time or later. In this case, if more time had been taken and the rent in the liver had been sutured and the abdomen had been closed without drainage, I believe the results would have been better. At the time, however, it was felt that the immediate need was to control the hemorrhage and to get out as quickly as possible, and packing seemed to best fulfill these indications.

TREATMENT OF GASTRIC ULCER HEMORRHAGE.

Medical treatment during acute hemorrhage shoud be the rule. The mortality is low in non-operative treatment, only three to five per cent., but extremely high if operation be performed. We should trust surgery less, and nature more, during this period.—ARTHUR HOLLINGWORTH, *in The Providence Medical Journal.*

ELEVATION OF THE PATIENT AFTER LAPAROTOMY.

In the last few years I have been in the habit of at once elevating the head of the bed in practically all abdominal cases. As soon as consciousness is complete, or within twelve or twenty-four hours, patients are placed high and comfortably with pillows on the back rest. This without doubt materially lessens the nausea and flatulency, and in all peritoneal and pelvic infections improves drainage.—RAYMOND WALLACE in the *Southern Medical Journal.*

THE RELATION OF THE RAILWAY SURGEON TO THE PATIENT.*

EDGAR A. VANDER VEER, M.D., F.A.C.S.,
ALBANY, N. Y.

The subject of my remarks is one which has interested me very much during the past few years. To do full justice to the company that employs you, and to the sick and injured, requires careful, judicial, and executive ability. The railroad surgeon's attitude to the injured, on the one hand, and the railroad company, on the other, is one of serious responsibility. The code of ethics of the medical profession holds that no matter in what position we are placed, or how unpleasant the situation, our duty is first, last, and all the time to the physical welfare of our patient. When a surgeon comes to have any considerable experience with these railroad accident cases, his faith in human nature is apt to be somewhat shaken and the beautiful teachings of the medical ethics are at times greatly weakened. With the majority of injured—not all, I am happy to say—the slogan seems to be, "The railroad company is rich; get all you can." And it is the prevention of this unfair attitude toward the railroad company, on the one hand, and the duty of being entirely just and fair to the injured, that makes the position of the railroad surgeon very trying. With full justice to all concerned, I have made it a rule to favor the injured as much as possible, on the theory that it is much better to have the patient satisfied, believing that when he goes to the company surgeon he will receive fair treatment and so will be guided to a more or less extent by what the surgeon tells him with regard to the duration and the extent of his disability, etc., rather than have him run off at the first opportunity to some non-company surgeon and perhaps receive a woefully exaggerated diagnosis of the case, with all its attendant results. At the same time, by inspiring confidence in the public in that way, they are all the more willing to come to the company surgeon at once.

Of course, this will be all changed under the new Workmen's Compensation Law, through which the injured person is practically compelled to employ the company surgeon, but the principle remains the same. The fewer the number of people engaged in handling the case the better. Previous to the enforcement of the Compensation Law, I always advised the injured to settle direct with the railroad company, rather than place their cases in the hands of an "ambulance chaser."

Another point which is occasionally a possible source of embarrassment to the company surgeon is the treatment and advice to be given an injured person who is or has been a patient of his. Here the situation is somewhat different from seeing the patient for the first time; for he more naturally looks to us for advice both as to the time of disability and the amount of damages. Here we have to be guarded in what we say, and the less we say the better.

In taking care of friends who have been injured, the company surgeon is also at a disadvantage; for here, in spite of all that he may do, his friendship is apt to sway him somewhat to the detriment of the interests of the company and at the same time result in no benefit to his friend. In such cases it is better, if possible, to turn the case over to some other company surgeon. From my experience with such cases, I find that the only course for the company surgeon to pursue is a rigid adherence to facts.

Another source of anxiety is in regard to the treatment and care of cases in the hospital. In some respects this is of more importance to the railroad company than it is to the surgeon. How long may the patient remain in the hospital without detriment to the company, and how soon may the patient be discharged from the hospital without prejudice to him? are two of a host of questions which the company surgeon must answer along these lines.

Often we encounter a patient who objects very strenuously to entering a hospital, but who after a couple of weeks' stay there objects even more strenuously to leaving the institution. Then again, there are cases which the surgeon knows are practically healed and have no reason for remaining longer, but who manage to develop pain and disability whenever the attending surgeon appears in the ward. Here is another problem for the company surgeon to solve. I have made it a point in this class of cases to rule more in favor of the patients and allow them to remain in the hospital perhaps a week longer than is absolutely necessary, in order to assure them that everything proper has been done. Unfortunately, I find that many of these cases are only too eager to find fault, not only because of their being discharged, but with their treatment in general. This tendency to try to remain in the hospital longer than necessary, to make their injuries appear more severe than they actually are, and to find fault with everything, I am sorry to say, I find more prevalent among the higher grades of employees than among the laborers and lower classes of workmen.

*Read at the 24th annual session of the New York and New England Association of Railway Surgeons.

We are frequently called upon to examine people injured on the railroad and treated by other surgeons, with reference to the severity of the injury and the amount of disability present and as to whether or not it is permanent. Very often we do not see these cases until some weeks or months after the alleged injury, and this makes our task, except in the most obvious cases, very difficult. As you all know, these cases are sometimes coached by their lawyers, and it is almost impossible to detect when they are malingering. Sooner or later, however, in the course of the examination they are almost sure to let something slip which puts the examining surgeon on the right track.

In the worthy cases (which are in the majority) I take it that the railroad company is always willing to go more than half way in the matter of settlement; but in the fake cases they are more likely to go just as far the other way in fighting them.

In making out reports with regard to the extent of the injury, the question has come up to me as to whether we should render any opinion in regard to the future condition of the patient, the point being made that later, if compelled to go upon the stand, this report may be put in evidence, with resulting embarrassment to us. But it always seems to me that the company, as well as the patient, should know the exact status of affairs and govern themselves accordingly.

I believe the majority of surgeons dislike to give testimony on the stand, owing to the amount of time it consumes, etc. When called upon to testify, I believe they should do so honestly and plainly, favoring neither one side nor the other, but giving the facts just as they present.

Another question that we are called upon to answer is to estimate the period of disability. This is often very difficult to do, as sometimes the cases which seem most trivial turn out to be the most severe; what seems to be very severe cases prove to be very mild. I always proceed on the theory to make the time of disability rather short, extending it later if the case proves serious, rather than making a long estimate of the disability in the beginning. It is always easier to explain why the disability proved more serious than we anticipated and so lengthen the time rather than shorten it.

A great annoyance to the surgeon is the relatives and sympathizing friends of the injured. They call one up on the telephone any hour of the day or night and ask all sorts of absurd questions. Of course, we have to answer these questions calmly and pacify them as much as possible. I find that the less specific we are, and the more we deal in generalities, the better, the less we shall be confronted with later when possibly on the stand the plaintiff's lawyer will say: "But didn't you tell his wife that such and such was the case?" Such questions, while not exactly embarrassing, are best to be avoided if possible. "Speech is silver, silence is golden."

The question of filling out insurance papers and giving certificates of disability also comes up. I never fill out one of them without first referring it to the claim agent for his sanction and also that he may be cognizant of the things going on in the case.

Briefly, then, I have tried to point out some of the difficulties under which a company surgeon labors. I think I have shown that his position is certainly one requiring careful judgment. It is possible that the new Workmen's Compensation Law may solve some of these problems.

MAJOR POINTS IN MINOR SURGERY.*

H. R. SACKETT, M.D.,
HOLYOKE, MASS.

Fellow members of the society and visiting friends:

The title of this paper, "Major Points in Minor Surgery," was prompted by the fact that during a fifth of a century doing railroad surgery, the mistakes I have made and the mistakes I have seen others make have impressed upon me one thing—no matter how great may be his name all surgeons make the major portion of their mistakes in the field of minor surgery. From the setting of fractured bones to the most simple of minor operations our pathway is strewn with our mistakes that the other fellow sees, and the other fellows mistakes that we see. It would be unreasonable to expect that we could or would see very many of our own mistakes, because the mirror we use seldom shows us anything but the conceit and self-importance that is projected into it.

I believe most of our mistakes are errors in judgment, not errors in mathematics. Not all problems in minor surgery are as simple as $2 + 2 = 4$. Seldom a doctor makes a good judge or a first-class business man; the get-rich-quick companies can tell you who are the easiest marks if you don't already know from personal experience. We too often jump at conclusions, we fail to properly weigh evidence, we take too much for granted, as the notes on the following case will illustrate:

A railroad brakeman called at my home at 6:30 A.M. to dress a sore hand. On taking off the bandage I found that the wound had been previously dressed. Twenty-four hours before, while coupling

*Read at the 24th annual session of the New York and New England Association of Railway Surgeons.

engine to baggage car, his right hand was caught between the two draw-bars, the fleshy part of the thumb was bruised and split open, making a clean cut about three inches long. It was about two hours before he could get to a doctor to have it dressed. The doctor washed out the wound and sewed it up tight, making no allowance for future swelling, and sent the patient home. During the following night the pain in the whole hand grew steadily worse. I found a hand badly swollen and three of the six stitches pulled out. I took the remaining stitches out, applied a hot antiseptic compress and sent him on his way rejoicing.

Now, the fact that this case came from the office of one of the best surgeons in Massachusetts, and that a surgeon of large experience and capacity should fall flat on the proper treatment of so simple and common a thing as a lacerated wound caused by external violence will persuade any fair-minded man that errors in judgment in minor surgery are possible. We all know how to sew up a cut, but we too often fail to take into account what made the cut—too often all the causative facts in relation to the accident are not properly weighed before we begin our treatment.

Our conclusions after observing a series of such cases is that deep incised or lacerated wounds are too often sewn up tightly with no thought of how much damage has been done the deep layers of muscle or how much infection may have been carried to it.

Be sure the bottom of the wound is clean before you seal the top. If there has been much crushing of the deep tissues be on the safe side and put in a small drain.

The hands and feet of railroad men are of great importance. It is here that conservative surgery shines at its best. Not all cases are as bad as they look. The most conservative surgeon amputates too much. The idea that you must cut off all bone that can't be readily covered with skin is too common a notion altogether.

The great toe, forefinger, or thumb should be saved; even the smallest fraction of an inch may be of positive value. If it is necessary to use the flesh the nail rests upon or the matrix for any part of the flap, scrape the matrix till you are sure all nail-forming tissue has been destroyed.

Nothing is more of a nuisance to a workingman than a deformed nail on some all-important finger. In all cases of injury to toes or fingers, we cut off only such soft tissue as we are sure has lost its blood supply. I use a pure peroxide dressing changed every twelve hours for the first two days, or a sulpho-napthol dressing changed as often as necessary to keep it clean. Some like dry dressings for lacerated wounds, but my experience has been that a very small percentage of wounds do well treated dry if there is much skin missing. Don't be in a hurry to cut off bone not covered by flesh; let it alone and see what nature will do.

G. B. lost the last joint of his great toe while trying to replace a derailed car. The skin was off from as far back as the great toe joint and very little flesh covered the remaining portion of the toe, the last quarter of an inch having no flesh whatever upon it. What to do was the question. Amputation was the quickest way out, but to get a flap it would be necessary to cut the metatarsal bone two inches back of the metatarso-phalangeal joint, which is not a practical proposition for any man who is called upon while at his work to climb a ladder. Unjointing the tarso-metatarsal joint was the only thing left to do. This would put the man back to work in four weeks with the best part of his foot missing. I understand shoes are made for just such cases. I know of trainmen who are wearing such shoes, but I have never seen one who was as sure on his feet as before the accident. It is just that point I wish to impress. We need sure-footed men. Man at his best is none too sure-footed and anything we can do to save any part of the foot is time and money well spent. Mr. B. was back at work in three months with all his foot but the last joint of the great toe.

I wish to call attention to the fact that excessive granulations, known by the laity as "proud flesh," may be mistaken for healthy granulations; the few notes I have on a case may be interesting:

A laborer came to my office with a sore thumb. He said the doctor who had been dressing it was out of town. He claimed it had been dressed every day for the first week or so and then every other day. He presented a large granulating surface from the end of the thumb to the first joint on the inside edge. The length of time he claimed it had been healing aroused my suspicions and with a pair of forceps I gently poked around at one little spot I could get under, the edge was freed, I lifted a thimbleful of granulation tissue out of its bed. This large mass came from one small pedicle the size of a pin. The strange thing about it was that the whole surface under the granulation tissue had healed with the exception of the place the pedicle came through. I cut the pedicle, applied a caustic, and that is all there was to it.

This case came from the office of a first-class man of large experience and can be explained only on the ground of carelessness. The matter of a sore thumb did not appeal to him as a thing of major importance. The fact that the man was deprived of his ability to earn his living, and his family was obliged to suffer, or the party for whom he worked was obliged to do without his services, did not make the slightest impression. It is a question if that phase of the situation was ever given a thought. We see enough of the innocent suffering

for the guilty in real life without increasing the total by our own carelessness.

My point is just this: We all make too many *plain fool mistakes.* It is good for us once in a while to confess our sins and in this way get inspiration for more careful work in the future.

SURGICAL CONSCIENCE.
THE DUTY OF ASEPTIC TECHNIC.

A F. JONAS,
OMAHA, NEBRASKA.

Conscience manifests itself in the feeling of obligation and duty, in the moral judgment of the individual, as applied to his daily work, and in the application of principles and methods that regulate his daily conduct and enable him to distinguish between right and wrong. It creates a feeling of duty or obligation—a moral sense; scrupulosity, conformity to one's own sense of right in conduct and practice. A good conscience must be based on justice, honesty, truth and correct reasoning. No one can reason correctly unless his conduct is based on a correct knowledge of underlying principles. And these principles in science must be based on painstaking observation and a correct interpretation of Nature's findings. Natural laws are fixed and irrevocable. The slightest transgression of any of them means error. To be conscientious assumes the existence of a high character. "Character is higher than intellect" (Emerson). It means a careful and scrupulous application of all known aids to the performance of the task in hand. A surgeon, without a conscience, is an anomaly. A surgeon without a character is a freak. The technic of surgical procedure is made up of endless details; the neglect of any of them is followed by defective repair. The punishment is sure and certain. The watchful eye of the police officer is not essential. The surgeon's conscience and it alone must be the guardian of the law. Surgical conscience means that the scientific habit must be acquired. There must be a scientific attitude of mind with a rigid adherance to truth which supplies a fundamental condition of character. Professional scientists and a scientific atmosphere are conducive to the character of the well-equipped surgeon.

It is, therefore, necessary for the training of the medical student to surround him with instructors of the highest scientific skill, men who are investigators, who follow the truth wherever it may lead them, men who are ever ready to discard the old, when new data have demonstrated new truths. This means that opportunities for actual work must be provided. Laboratory facilities must be ample. There must be supplied an equipment in the form of well-selected instruments and apparatus as well as literature. The student must learn to use his hands as well as his brains, that he may learn to think and manipulate. The manual dexterity that he acquires in the laboratory should stand him in good stead when he enters on the practical duties of his professional work. He soon learns that errors in the laboratory mean failure. He learns precision and he becomes exact and if he persists so that exactness becomes a habit, he will find little difficulty to apply the same methods to his surgical work.

Great stress has been laid upon the importance of supplying large and well equipped laboratories for our medical schools. These are certainly of great importance, but they should not occupy the first place. The first requisite for a medical plant are the instructors. The school should be well manned. Men are more important than palatial buildings and costly equipment. The young man, schooled in such an atmosphere, learns only the truth as revealed by modern research. Further, he has been taught the methods by which he may follow the truth and the means of solving problems that are not yet fully revealed.

From the practical side of the surgeon the laboratory must develop in him a conscientiousness that becomes a habit of his daily life. Constant repetition gradually becomes a subconscious act, so that each step of the procedure follows the other in as perfect and harmonious succession as do the notes of an instrument played by a master. Every break in the surgeon's technic must warn him as if he had burned his fingers on a hot iron. When he has entered on the practice of surgery, he must have learned that his methods must be adapted to the pathology before him. If he is only a routinist, his success will be indifferent. But if he has in mind, first of all, the welfare of his patient, he will succeed. If he learns when to operate and when not to and adheres to his convictions, his reward is certain. His guiding thought should always be a desire to relieve and cure. He must not be satisfied with the methods of the present, but he must strive to improve and to advance. He must be familiar with the achievements of the past and know the reason for the successes and errors of his predecessors.

The surgeon's duty is to do complete work when conditions will allow. After a thorough investigation as to the nature and extent of the lesion, he should neglect no part of an operation. He should not be satisfied with the removal of a diseased ap-

pendix and overlook a megalo-cecum or pathologic pericolic membranes nor ignore a misplaced uterus or diseased uterine adnexa. He should not be satisfied with the easier operation of draining the gall-bladder when its condition demands its removal. He must not rest content with a simple gastro-enterostomy when a pylorectomy will add to the permanency of the result. He should not operate against time. His chief aim should not be an effort to count up a large number of cases. For no one man can do ten or twelve cases daily during the space of a forenoon and do them all well.

Having familiarized himself with his case, the duty of technic is thoroughness and gentleness. He should dissect and cut rather than tear and bruise the tissues. It has occurred to me that at least a part of the success in anoci-association is Crile's wonderful technic. His knives are unusually sharp, he has wonderful skill as a dissector. His hemostasis is accurate. All of his maneuvers are of the gentlest. There is no bruising of the tissues. He works rapidly. All of these maneuvers reduce the chances for shock, because the traumatism created by the operation is reduced to a minimum.

We may say that our technical duty consists in gentleness of manipulation, and complete operations done under a faultless asepsis, based on an accurate regard for anatomy and living pathology.

It was Richard Volkmann who first insisted that the operation itself and the first dressing determined the fate of the wound. All subsequent experience has demonstrated the correctness of this view. A wound which had been treated in an anti-bacterial sense, aseptically, remained sterile. It was with such a comprehension that the transition from antisepsis to asepsis took place.

In times gone by we were wont to attribute wound disturbances to supposedly imperfect sterilization of catgut, especially if the gut had been prepared by a manufacturer. With an increasing experience we were, perforce, compelled to realize that the ligature had often been unjustly accused and that the real fault lay in the imperfect preparation of our hands. When we think for a moment, we note what we ought to have seen long ago, that dirt and infection are more likely to adhere to our grasping apparatus than to any other part. Our hands must handle, not only operating materials but often touch unprepared parts of the patient and other objects that are not free from pathogenic organisms. The peculiar construction of our hands, especially our fingers, renders sterilization difficult, particularly the nails. We all know how difficult it often is to remove the final rests of dirt and infection from under the nails. Too little importance is attached to individual difference in the nail construction and the different conditions of the nails at different times in the same individual. At times the nail cleansing is a very simple one, and at others, it is most difficult and almost impossible, owing to the ragged condition of the skin under and around the nail beds. The act of soaping and brushing and scraping the open and smooth nail is comparatively easy. If the nail bends forward and closely hugs the finger's end the more difficult is the soaping and cleansing.

The method which we use for the sterilization of instruments, unfortunately, can not be used for our hands. It is possible, however, by a process of adaptation, to employ a gradually increasing temperature of the water used for our hands, but it has its limitations. The heat and the soap soften the superficial epidermal layer with much certainty. The surgeon who can adapt his hands to high temperatures during the sterilization process has many advantages and more surely attains the desired end. Experience has shown that mechanical disinfection —by nail scraper, soap and brush, and the hottest bearable water—is by far the best method. Chemical disinfection, as usually employed, is absolutely without effect. The momentary dipping of the hands in a chemical solution has positively no germicidal effect. How often do we see an operator take hold of a chair or table, or brush his hair or moustache, or readjust his glasses, and then proceed with his operation after dipping his hands in sublimate solution for the long space of five seconds? He fears to keep them there longer than five seconds because he might really disturb the happiness and comfort of the adherent germs. Then, when his wound suppurates, it must have been the luckless catgut!

In spite of the many experiments and the many more articles written on the subject of hand sterilization, we cannot rid ourselves of the conviction that it is impossible to render the hands sterile as we do instruments and dressings. A perfect method of hand sterilization does not exist. The most conscientious surgeon cannot give the guarantee that his hands, in any given case, are entirely free from pathogenic germs. The danger of infecting with doubtful fingers increases with the duration of the operation and the intensity with which the fingers are used, especially in a cavity where adhesions are separated and the tissues have become more or less bruised. Under such circumstances we must ask ourselves if it is not advisable to *refrain from a direct contact between the wound and our fingers.* Instantly we hear the reply that it is impossible

to do any operation without more or less continuous contact of the fingers with the wound surface. But let us pause for a moment and consider an ordinary inguinal herniotomy. The skin incision is made with one or two strokes. Another incision and the subcutaneous fat is divided down to the cremasteric fascia and the external oblique, three or four bleeding points are clamped; the wound margins are separated with sharp retractors or by placing the left thumb and index finger on either side of the incision and a half inch away from its margins, separating them so that the external ring can be seen. Should any lose areollar or other tissue overlie the margins of the ring, it can be pushed aside with a Kocher director or a swab. The canal is laid open with a pair of scissors or with a knife following a groove in a director. The left thumb and finger now release the skin margins for they will now remain sufficiently separated to admit of all manipulations. No part of the wound has thus far been touched with the fingers. Now a clamp is fixed to each margin of the divided fascia, the contents of the inguinal canal are picked up with a mouse-tooched forceps, the cremasteric fascia and the underlying connective tissue is released and divided with a scissors aided by a thumb forceps. The outline of the hernial sac can now be plainly seen and it should be grasped with an artery clamp and held with the left hand. Take a swab in the right hand, grasp the cord with the gauze and gradually separate the sac from the cord to the internal ring. Then transfix the sac, passing the needle with a holder. Cut away the sac and drop the stump. Now drop the cord into its bed and close the canal with chromicised catgut or tendon according to your special method. Always grasping the tissues through which the needle passes with a pair of dissecting forceps. And, lastly, unite the skin margins as you choose. All this has been done without bringing the fingers in contact with any part of the fresh wound, every part having been handled with sterile instruments and swabs. It is at once clear that the chances for infection have been reduced to a minimum. Barring the possible errors in the preparation of the ligature material, all chances for infection have been eliminated. This is known as the "messer and gabel" method of Koenig.

With an increasing experience I have added one operation after another to my *reportoire* where the direct contact of the fingers with the wound surface was avoided. I found that 75 per cent. of the herniae can be managed in this way, nearly all scrotal operations and all of the cases of round ligament shortening according to Alexander. Interval appendicectomies, where adhesions are limited or entirely absent, can be performed without finger contact. Breast amputations are done in like manner. Many intestinal resections and stomach operations are done by this method. The most extensive extirpation of cervical adenomata and many goiters can be completed without digital contact. Nearly all neoplasms on the exterior of the body, the skull and extremities can be removed in the same way. Nearly all amputations and joint resections should be and have been done in the same manner.

In short, nearly all the capital operations can be thus managed. Thereby the operator will save himself the painful apprehension of infection.

To carry out operations in accordance with this idea requires a certain technic which can become exact only after an infinite amount of self-training and constant, unremitting, self-watchfulness. The idea must become so thoroughly rooted in one's mind that to touch a raw wound surface should fill one with horror. When the operator has succeeded in fixing this idea within himself, he must imbue his assistants with the same principle. This is often not difficult, because the assistant usually has everything to learn and nothing to unlearn. The older surgeon who has learned to cut and poke his finger into the wound at every step, may find it difficult to unlearn a bad habit, perhaps can see no harm in the procedure and will continue to cut and poke and infect to the end of his time. The younger man, who has been reared under the influence of the science of bacteriology, has no difficulty in understanding the doctrine of "touch not."

It is self-evident that our instrumentarium must be specially selected. The instruments, as a whole, should have longer handles, so that the hands are not brought too near the wound. A larger number of retractors should be used and they should be of greater variety as regards width and length of hook so as to suit superficial and deep wounds. The hemostats should all have longer handles and they should have a variety of jaws. The ligation of ligatures can easily be done with two pairs of clamps. Suture and transfixation ligatures can all be introduced with a curved needle. To lift structures, and especially neoplasms, from deep cavities we require a variety of volsellum and other grasping forceps.

Should it be necessary to retract wound margins with the fingers, the structures should be covered with gauze, but finger retraction is very seldom necessary. All sutures must be introduced with a holder. The use of drains in clean wounds should find very little place. If we have completed an operation without finger contact and the wound itself contains no infection, we will be certain of

the result. We can feel assured that a rise in temperature is not an indication of infection which calls for a change of dressings. In several of my cases that had been operated upon by the "touch not" method, the temperature rose to 103° F., but I was so confident that I had to deal with an absorption fever that I fellt safe in not opening the dressing.

We have all stood by and observed the surgeon who felt his way along. He felt of the tissues so frequently that you could not repress the thought that he did not know his anatomy. The man who is not familiar with the appearance of normal tissue, certainly should not attempt an operation. He must thoroughly familiarize himself with normal living tissues by observing and assisting surgeons of large experience at work for a considerable period. The surgeon who must always feel his way into the abdomen is not properly prepared for such important work. He seems to be unable to differentiate between physiological and pathological structures. While we cannot entirely do away with digital exploration, experience has taught that about 60 per cent. of the cases can be done without direct finger contact. Operations, so far as possible, should be done through liberal incisions, so that the entire field is brought within the range of vision and then it is possible that a neat anatomical dissection can be made. Important structures are less likely to be damaged. If a muscle or tendon requires division to facilitate better access to the lesion, it can be smoothly done and can be accurately readjusted and united by exact suture. Hemostasis is not difficult. Blood vessels can often be seen and cared for before they are divided. Given free access to the wound, the entire operation, in most instances, can be done with instruments. The fingers need touch no part of the operation field.

I have succeeded by this method in nearly 60 per cent. of my cases. In the 40 per cent. where I have not succeeded entirely without handling the tissues with the fingers, I must ascribe the failure partly to a still defective technic and partly to the nature of the pathology, as, for example, the separation of extensive pelvic adhesions. Even here, it is possible to manage many adhesions by wrapping around the ends of the fingers several layers of sterile gauze, which not only prevents infection but very materially assists in separating the adhesions. To prevent finger contact absolutely, we have a means in rubber gloves, which may be worn at all operations. Gloves are easily sterilized by boiling or by steam prior to the operation, by scrubbing with soap and water should they become infected during the course of the operation. The ease with which a new smooth rubber glove can be sterilized, should there be accidental contamination during the progress of an operation was shown by O. Wandel and O. Hoehne, assistants in Kiel. They found after a series of experiments that rubber gloves could be smeared with cultures of staphylococcus pyogenes albus, streptococcus pyogenes prodigiosus, or with staphylo or streptococcus pus, or with intestinal excrements, and, after being allowed to dry for twenty-four hours, could in many instances be made absolutely sterile by a vigorous scrubbing with green soap and water for a period of two and one-half minutes, certainly a great advantage over any hand sterilization with which we are now acquainted.

Gloves are not only important for the performance of aseptic operations, but they are indispensable, when dealing with suppurating conditions for protecting the operator's hands. Infection is still too often carried from one case to another, simply because the operator insists in exploring a suppurating cavity with his unprotected finger. No suppurating surface should be touched with the bare fingers. A certain and safe hand sterilization method to insure asepticity after fouling the hands with pus is not known. In all cases where suppurating or infected cavities are examined by digital exploration, the finger should be protected by a new finger-cot, or the hand should be encased in a new rubber glove. Direct digital contact must be avoided. We must, however, reject a glove that is perforated and never use one from which the gloss has disappeared. The use of a perforated glove may become a source of infection, particularly when the hand has been introduced into a wet glove, which will macerate the epidermal layers and at the same time liberates the skin bacilli. The dry sterilized gloves and dry fingers powdered with talcum will, to a great extent, prevent infection if the glove is accidentally perforated.

So we note that in septic as well as aseptic conditions, the bare fingers should not come in contact with the wound surfaces. In any event, whether the wound is aseptic or otherwise, it is in accord with the teachings of modern surgery, which is based on bacteriology, that all wounds will fare best when subjected to the least possible digital contact.

The necessity for faultless aseptic technic is best illustrated in our fracture work. All are agreed that to achieve ideal results it is essential that the work be done under ideal conditions, which means a perfect control of asepsis and unusual mechanical and operative skill. Any lapse in aseptic detail is more fatal to perfect bone union and perfect final

results than any similar error in the technic in abdominal surgery for the lymphatics are less able to cope with infections than in the peritoneal cavity. I need only mention the elaborate and exact aseptic details as practiced by Lane in his fracture operations.

I have said enough to show what is meant by a surgical conscience. We must first know Nature's laws and the penalties for any transgressions. We cannot escape any violations.

A REPORT OF PRACTICAL EXPERIENCE WITH NARCO-ANESTHESIA.

HENRY BEATES, JR., M.D.,
PHILADELPHIA, PA.

To Professor W. Wayne Babcock I am indebted for calling my attention to the advantages of "narco-anesthesia." As a more general application of this method of inducing anesthesia has been utilized by me, and the advantages over ether, for similar conditions, are so unquestionably superior that a brief résumé of experience seems worth presenting.

The operations on the brain by Dr. Babcock which I had the privilege of witnessing convinced me that the usual apprehension and distress that accompanies ether anesthesia preparatory for operation is entirely eliminated by narco-anesthesia. Another decided advantages is the conspicuous absence of respiratory disturbance incident to the hypersecretion of mucus, which, in addition to the struggles of being etherized, invariably results in great distention of the veins, and therefore interferes—as all operators well know—with facility of procedure.

Narco-anesthesia also eliminates gastric disturbance, and the circulatory turgescence accompanying emesis. The long rest after completion of operation—varying with the individual and the degree of narco-anesthesia induced, from three to seven hours—finds the patient emerging from unconsciousness without the nauseating effects and the stench of ether, and without that profound relaxation which is the consequence not only of the direct action of the latter upon the brain and nerve-tissues themselves, but also of its disintegrating effect and functional disturbance of the erythrocytes, which contribute so largely to surgical shock. So pronounced is this, that the conclusion is inevitable that shock is, more largely than hitherto has been recognized, the result of apprehension and fear, suppressed at great nervous expense in approaching the operating table; and, doubtless, as Crile has intimated, the unconsciousness of ether does not involve the unconsciousness of the cerebrum to the shock-producing effects of pain. Whether one or two of these etiologic factors adequately describe the freedom from shock, certain it is, that the very desirable state of post-operative tone exists after narco-anesthesia.

With abdominal operations involving much manipulation there has thus far been total absence of post-operative ileus. In this feature ether anesthesia and narco-anesthesia present such a sriking contrast.

The method of procedure which was gradually evolved, and which for more than a year I have pursued, consists in the hypodermatic injections of one-fiftieth of a grain of scopolamine hydrobromide, with one-sixth of a grain of morphine. An hour and a half before the operation is scheduled, the first injection of this formula is given, half an hour later the second, and twenty minutes after the second, a third, with or without the morphine, as the condition of the patient indicates. Recently, twenty minute intervals have been satisfactorily practiced.

At the time of the third injection an enema is given of two fluid ounces each of spiritus etheris compositus and spiritus frumenti, and four ounces of water. As a rule, there is sufficient narco-anesthesia induced by this to render practicable the performance of any operation. Occasionally, the sensorium is only slowly rendered profoundly somnolent. This is manifested by the patient opening the eyes when attempt is made to transfer him to the operating table. More rarely, apparent wakefulness is manifested by the patient raising the head and appearing to look about. In the two or three instances where this latter condition obtained, later inquiry developed the fact that consciousness was totally lost—at all events no recollection whatever was had of the apparently partially roused state. When this occurs, the hypodermatic injection of apomorphine hydrochloride exercises a synergistic effect, and renders total the desired narco-anesthesia within from three to five minutes. In only one instance did slight vomiting follow the apomorphine.

From the viewpoint of the physiologic effects of morphine, this combination fails to produce the physiologic effects which an equal dose of morphine alone would show. The pupil is not contracted, and the respirations are not lessened in number nor modified as to depth; the heart action remains practically normal. Flushing of the face, which would be occasioned by an equal dose of the scopolamine hydrobromide without the morphine, is present only to a mild degree. Occasion-

ally, the characteristic redness of the face is moderately pronounced.

Practically, once in twenty-five cases it is necessary to give a fourth, and still more exceptionally a fifth, injection of the scopolamine-morphine combination. In the five or six cases where this has been done, there was very slight physiologic respiratory alteration. In a word, there was wanting the toxic manifestations of either morphine or scopolamine if administered in equal doses and alone.

In some few cases of cardiac and renal disease, and in arteriosclerosis, where the administration of ether would have been attempted, if at all, with trepidation, narco-anesthesia was induced without any untoward effects. A surprising result of this combination is that it does not lessen renal function, unless five injections are necessary, and then but slightly, for a few hours. The patient presents the appearance of one in a natural sleep, and if apomorphine hydrochloride has not been used, there is a slight flush. When this remedy has been employed for its synergistic action, pallor may or may not exist; as a rule it does, for several minutes, and then gives place to a natural color.

At the patient's head should be an attendant, whose duty it is to see that there is not a falling back of the tongue, resulting in asphyxia. (It may be remarked, at this juncture, that there is every reason to believe that some, at least, of the fatal cases reported as the result of scopolamine anesthesia—*not* narco-anesthesia— were really instances of asphyxia.) This precaution is especially necessary, as profound narco-anesthesia may abolish all reflexes, and there may be no symptoms of obstruction of the respiratory tract other than convulsive movements of the thorax, which inexperienced attendants might look upon as modifications of respiratory movement. It is a good plan to introduce a compress between the teeth, and to have convenient a napkin, with which, by grasping the tongue between the thumb and fingers, it can be gently drawn forward, and the danger of asphyxia absolutely avoided. The use of the tongue-forceps is to be condemned, especially as it is not necessary.

Under narco-anesthesia I have performed radical operations for mammary carcinoma. These patients recovered consciousness in from three to seven hours, with entire freedom from the disagreeable after-effects which some of them had suffered, who had had a similar operation performed under ether a few months before. Their condition was such that they were allowed—what is most unusual—indulgence in a wholesome dinner, which was digested and assimilated as though under perfectly normal conditions. The advantages of thus being enable to feed liberally, and therefore maintain strength, and hasten convalescence are too evident to require further comment.

In abdominal operations it is natural to infer that the large dose of morphine administered would predispose to post-operative ileus. Thus far, in not a single instance did this troublesome condition develop. Such operations as lateral bowel anastomosis, cholecystectomy, and freeing intestinal bands and adhesions, which are so often followed by post-operative ileus, have been successfully completed.

The absence of nausea and vomiting commends narco-anesthesia most especially in the radical cure of hernia, and in the extensive plastic operations in pelvic surgery, such as are involved in operations for complete procidentia.

The absence of those blood changes that so commonly accompany ether anesthesia is another reason for selecting narco-anesthesia, especially where prolonged operative measures are necessary. Ophthalmic surgeons who have witnessed operations under narco-anesthesia inform me that iridectomy and cataract operations have been performed especially successfully; the absence of post-operative vomiting, for self-evident reasons, commending this form of unconsciousness in operations of this type. Operators who have witnessed this desirable anesthesia have requested me to induce the same conditions for them, and supra-pubic prostatectomy, amputation of the thigh for diabetic gangrene, and nephrectomy for tubercular kidney, have thus been performed in the most satisfactory manner.

In some eighty major operations, the delirium which has been the subject of comment as an accompaniment of scopolamine anesthesia, has not in one instance manifested itself with this manner of using the drug in combination, as described. "Twilight sleep" must not be confounded with narco-anesthesia.

In children, relatively large doses are necessary to produce absolute abolition of the pharyngeal reflexes, which renders tonsillectomy, and operation for the removal of adenoids, troublesome, insofar as the long care is concerned, because the degree of narco-anesthesia necessary means that the danger of the tongue falling back will continue from three to five hours after operation, thus necessitating the inconvenience of having an intelligent attendant seated by the bedside until the little patient has thoroughly recovered consciousness. With this exception, it possesses advantages far over-balancing those of ether anesthesia.

In operations upon the neck, such as thyroidectomy, and the enucleation of tubercular lymphatic glands, there is great freedom and ease of procedure, because of the absence of the turgescence of veins which the struggles of ether anesthesia invariably cause.

I know of instances of operation upon the brain, in seniles, where ether had to be abandoned, and the operation postponed, where later narco-anesthesia was induced, and the operation completed without any untoward symptoms whatsoever.

For the past three months the ease with which the anesthetic state is thus induced has determined me to save the patient the suffering incident to the removal of drains from the abdominal cavity, packings, etc., which certain procedures necessitate in the after-treatment. The injection of one-fiftieth of a grain of scopolamine, and one-sixth of a grain of morphine suffice, and this phase of post-operative after-treatment is carried on with a minimum of disturbance.

THE TRANSVERSE ABDOMINAL INCISION.

R. E. FARR, M.D.,
MINNEAPOLIS, MINN.

In the *Boston Medical and Surgical Journal,* March 29, 1896, J. W. Elliott published a description of a modification of the McBurney incision for appendicectomy. A. E. Rockey of Portland, Ore., in the *Medical Record,* July-December, 1905, strongly recommended the transverse incision for work in the lower abdomen and called attention to the satisfaction with which the appendix could be removed through this incision. In January, 1906, Gwilym G. Davis of Philadelphia once more described this incision in the *Annals of Surgery.* Boeckman of St. Paul in the *St. Paul Medical Journal,* June, 1910, also called attention to this incision, for which he had been given credit by Charles F. Denny in the *Boston Medical and Surgical Journal,* June 3, 1909. Although Boeckman worked out this incision independently and without knowing that it had been used before, he gives Elliott the credit for having first described it.

Having been, since 1910, an ardent advocate of the transverse abdominal incision for all work in the upper abdomen, not excepting that upon the kidney and spleen, it took but a few trials of the Elliott incision to convince me that it was by all odds the most satisfactory incision for cases in which the so-called gridiron incision of McBurney or McArthur is ordinarily used, and even for the cases in which the modifications recommended by Wier and Harrington are employed. In a certain percentage of cases bad results follow the incision recommended by Battle (*British Medical Journal,* 1895), Jalaguier (*La Presse Mèdicale,* 1897), Kammerer (*Annals of Surgery,* 1897), Lennander (*Centralblatt für Chirurgie,* 1898), and Edebohls (*Medical Record,* 1899). Even where primary healing takes place, it is probable that these bad results are due directly to nerve injury. As the nerves to the rectus muscle enter at right angles, any vertical incision must necessarily interrupt their continuity. The only reason for making any incision other than the gridiron is on account of the necessity for more room through which to carry out the operative procedure.

With the incision of Elliott ample space may be

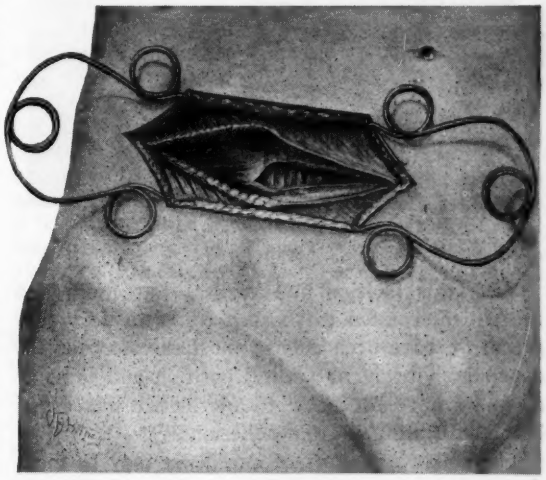

Figure 1.

obtained. Being nearly transverse, it severs the fibers of the external oblique in a diagonal direction. Although Boeckman states that these fibers are subsequently under some tension when closing the wound, such has not been my experience. I have found it possible in all cases to imbricate the layers with mattress sutures.

By continuing the incision to the midline and stripping the aponeurosis from the right rectus, this muscle may be retracted to the midline, and in this way an incision several inches in length may be obtained. The incision may be made at the level of the umbilicus or several inches below, depending upon the pathology one expects to encounter. In case drainage is necessary, I make it a rule here, as in all other localities where abdominal drainage is necessary, to provide a separate stab wound and to close the original incision, excepting in cases where one must of necessity leave the orig-

inal wound open. I know of but one hernia which has followed in my cases, and this in a case of suppurative appendicitis in a physician whose extensive drainage was carried out through the outer angle of the wound. As I have done most of this work under local anesthesia for some time past, I feel that I have given the method a very severe test.

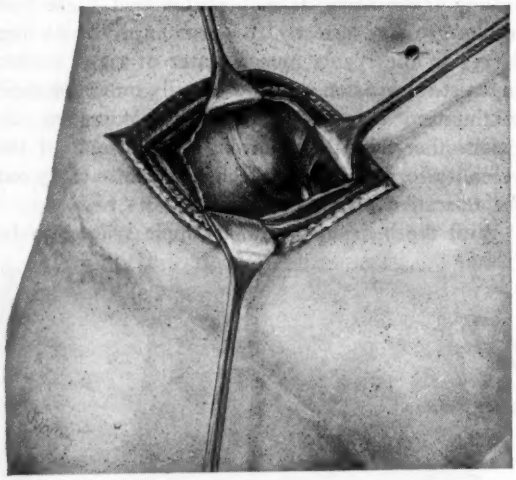

Figure 2.

With this incision and vertical retraction, and the patient rotated to the left thirty or forty degrees, we have been able in most cases to see the appendix lying in its natural position and in some cases we have been able to anesthetize this organ before liberating it from adhesions.

The following points of excellence may be mentioned, it seems to me: Sufficient room, conservation of nerve and blood supply, and the cosmetic result of closure.

SKIN CANCERS OF THE EXTREMITIES.

In considering the predisposing causes of cancer of extremities, Volkmann conveniently divided the cases into three groups, a classification which has been followed by a number of subsequent writers on the subject. The first group consisted of cases developing upon chronically inflamed tissue, as a result of ulcers, scars, fistulæ, osteomyelitis, lupus, etc. The second group included cases developing upon warts or moles, either congenital or acquired in later years. The third group consisted of cases arising in apparently normal skin. In a series of 321 cases, von Brunn found that 227 could be placed in the first group, 46 in the second, and 48 in the third. It is thus seen that the majority of cases developed upon a chronic inflammatory basis.—HOWARD FOX in *The Journal of Cutaneous Diseases.*

AMBER COLOR OF SPINAL FLUID WITH COAGULATION EN MASSE—REPORT OF CASE.

WILLIS C. CAMPBELL, M.D., F.A.C.S.,
Professor of Orthopedic Surgery, University of Tennessee; Orthopedic Surgeon to Memphis City, Baptist Memorial, Lucy Brinkley, and St. Joseph Hospitals,
MEMPHIS, TENN.

During the past year I have had under observation a boy showing unusual spinal symptoms with an amber-colored cerebro-spinal fluid, which coagulated en masse about one hour after spinal puncture in the lumbar region. An inflammatory condition was evident, but no classification could be made until I saw by chance a most excellent discussion of the condition with a complete review of the literature by Charles Mix* of Chicago.

The normal spinal fluid is clear and does not coagulate. A yellow color may occur after hemorrhage, but this has no bearing on the subject under discussion, unless associated with rapid coagulation en masse.

Spinal fluid bearing these properties has been found only in the lumbar region, and apparently occurs from any condition that may bring about a closing off of the lower canal into a separate compartment or cul-de-sac. Punctures higher give a clear fluid. Froin first described the condition in 1903, since which 34 cases have been reported, J. B. Murphy showing the last which instigated the investigation of Dr. Mix.

There are three types of spinal affections in which this condition has been found:

(1) Acute inflammations, as tubercular meningitis, which may arise as a result of vertebral infection. (Pott's disease.)

(2) Certain types of flaccid or spastic paralyses which have been shown at autopsy to be due to a pachymeningomyelitis, constricting the cord in the region of the conus, making a cul-de-sac of the lower canal.

(3) Spinal tumor may mechanically cause a blocking or may act as a ball valve, explaining variations in the character of the fluid in some cases.

My case is the 35th reported, the third observed in this country, but the first of the second type above described. The essential facts in the history are as follows:

W. H., age 14 years, was referred to Dr. E. D. Mitchell of this city, March 10, 1914, on account of a marked lordosis with severe pain in the lower extremities. His mother thought that he had in-

*Murphy Clinics, April, 1915.

jured the spine while vaulting. In November, 1913, albumen was found in the urine, which responded to treatment by the family physician. He had always been quite healthy and unusually strong. Family and past history negative. He first noticed slight pain in lumbar spine about September, 1913, which became gradually more severe and extended down both sciatic obturator and anterior crural nerves. At times the pain was almost unbearable.

Examination: Attitude erect, spine held somewhat stiff with marked lordosis. Movements in all joints of lower extremity painless and of normal range, but lordosis could not be affected by extreme flexion of the hips. Knee reflexes slightly increased. Side bending of the spine apparently normal. Flexion and hyper-extension markedly limited. No irregularity of the vertebrae could be seen. Rectal examination was negative. He was carried to the hospital in an automobile, and the slightest jar of the car gave pain. Skiagrams were made from the hip joints to the skull, all of which were negative. The day urine showed albumen present, but no casts, the night urine was negative (orthorstatic albuminuria). The blood findings, including Wassermann reaction, were negative. Von Pirquet tuberculin test was also negative. I thought possibly a lumbo-sacral displacement as described by Goldthwait might exist. On March 14, 1914, the patient was placed under an anesthetic, when the lordosis automatically disappeared, and a cast was applied from suprasternal notch downward to left knee joint.

There was considerable relief until on March 20, 1914, the mother 'phoned that there was difficulty in micturition, great pain in the back of the head and both lower extremities, and that the temperature which had previously been normal was 101°. March 21st, he had two involuntary movements and the left lower extremity showed flaccid paralysis with weakness and absent knee jerk on the right side. Catheterization was also necessary. He was moved at once to the Baptist Hospital, where a neurological examination was made by Dr. Sommerville, who could give no further information. A lumbar puncture was made by Dr. Wm. Krauss, pathologist, who found difficulty in obtaining fluid on account of limited flexion, and coagulation of the fluid in the needle, but when the flow was free the tension was high, and much to our surprise the color amber or yellow and clear. Dr. Krauss reported lymphocytosis with coagulation en masse within forty minutes. All cultures were negative as was the Wassermann reaction. Unfortunately no animal tests were made.

Severe reaction with mild meningitic symptoms immediately followed the spinal puncture. The temperature rose to 103°, pulse 180, and the condition was desperate for the ensuing week. A large decubitus developed over the sacrum, and there was rapid loss of flesh until emaciation became extreme.

We thought possibly an atypical tubercular bone affection with localized menigitis existed, but numerous roentgenograms were negative, as was the tuberculin reaction. Malignancy was naturally considered. Operation is advised by Murphy, but was absolutely out of the question on account of the grave condition of the patient. About this time I was using the Rollier sun treatment in quite a number of tubercular and other affections of the bones and joints with marked success, and I decided to apply it here, nothing better having been suggested.

On March 25, 1914, the boy was placed on a Bradford frame, sand bag under chest, face downward and the entire body exposed to the sun five minutes three times a day. The time was rapidly increased until he was exposed six hours per day. He pigmented rapidly and within two months he was bronzed. The improvement was slow but decided. The pain disappeared within a few weeks and muscular power was restored to both extremities. He did not gain in weight for 8 months. The pulse remained 100 to 120, temperature 98° to 100° for four months. He remained in the prone position, being easily managed as regards defection and micturition. Flexion and hyperextension continued markedly limited, though side bending was quite free. Skiagrams every two months were negative.

On February 1, 1915, all active symptoms having subsided except limitation in flexion and hyperextension, the patient was allowed to sit up. He soon began to crawl and by March 15th could take a few steps, since which time there has been rapid improvement in every way. At present, July 1, 1915, he can walk a mile and suffers no inconvenience. The spine is limited only slightly in flexion. The knee cannot be extended with the hip flexed above 60°. Weakness persists in tibials causing pes planus, which is without pain.

Repeated skiagrams, tuberculin tests and the subsequent course exclude involvement of the bones, and as a subsidence of symptoms would probably not have occurred in a spinal tumor, we naturally conclude that a chronic fibrinous pachymeningimyelitis with constriction in the region of the conus evidently existed as first shown by Cestan and Revaut at autopsy. Unfortunately we could not make punctures at a higher level or further lumbar punctures on account of the violent reaction following this procedure.

We cannot know the effect of the solar treatment from one case alone, but from the resolving action reported by many in tuberculosis of the vertebrae, we might assume the same effect to be possible when an inflammatory exudate occurs within the canal.

For a full discussion of the literature the reader is referred to the article of Mix.

Tumors of the testis not infrequently are accompanied by a collection of fluid in the tunica vaginalis. In such a case it would, of course, be a great mistake to regard the condition as a hydrocele only.

AN ALL-METAL SYRINGE FOR USE IN LOCAL ANESTHESIA.

J. H. JACOBSON, M.D., F.A.C.S.,
TOLEDO, OHIO.

The syringe here presented is a very practical one, intended for the injection of novocain and adrenalin solutions after the method of Braun, for the production of "leitungs" or conduction anesthesia.

It is not well adapted for the injection of small amounts of anesthetic solutions for the production of wheals after the Schleich method, although it can be so used.

The syringes which are ordinarily used for the injection of solutions for local anesthesia are usually of glass and metal and are of the Record type. These Record syringes are most excellent for the purpose, but they possess the disadvantage of being expensive and easily broken, while their repair is likewise expensive and attended by delay.

One of the prime requisites for the successful employment of the newer methods of local anesthesia lies in having a syringe that works perfectly, that is always ready for use, and that possesses the additional advantage of being inexpensive and easily sterilized.

The syringe which I am presenting is an all-metal one and has a capacity of about 15 cc. The nozzle or tip of the syringe is made at an angle of 60° to the barrel and fits any of the needles made for the Record syringes.

The advantages claimed for this syringe are

First.—It can be sterilized without fear of injury by boiling with other instruments.

Second.—It is always ready for use.

Third.—It is inexpensive and can be replaced for less than what it costs to repair the glass and metal syringe.

The only disadvantage this syringe possesses is that the solution cannot be seen during the injection. This, however, is no great disadvantage because of the large amounts of solutions employed and on account of the ease with which the syringe is used after a little experience with it.

EXAMINATION FOR VESICAL MALIGNANCY.

Malignant vesical growths can often be felt by bimanual examination with the index finger of one hand in the rectum if the patient be a male, or in the vagina of the female and the other hand making firm deep pressure suprapubically. A tumor that can thus be felt is malignant. In advanced cases of vesical malignancy the pelvic and deep inguinal lymph nodes can also be palpated as multiple hard masses. Papillomata cannot be palpated, neither do they cause lymphatic involvement.—E. O. SMITH in *The Lancet-Clinic.*

AMERICAN SURGERY.

Our surgery is cosmopolitan, based on the best in all countries, improved upon and made a part of our practice. American practice is too broad to be national. It has the scientific spirit, and science knows no country.

Within 100 years we have seen the leadership of medical science pass from England to France, from France to Germany. Modesty prevents me from naming the country to which it will go next.—WM. J. MAYO in *The St. Paul Medical Journal.*

THE AMERICAN MEDICAL EDITORS' ASSOCIATION.

The annual meeting of this association will take place at the Hotel McAlpin, New York City, on October 18th and 19th. The executive session and reading of papers will occupy both these days, and the annual banquet will be held on the evening of the 19th.

The time and place of meeting selected this year afford to the members an opportunity to combine clinic visits with considerations of medical journalism.

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WALTER M. BRICKNER, M.D., Editor

NEW YORK, SEPTEMBER, 1915.

TWILIGHT SLEEP.

Now that the monthly, weekly and daily press are letting up on the flood of articles dealing with twilight sleep; now that the pioneers who have used this method in Freiburg, Kankakee, Kokomo and Paducah have finished reporting their series of 10,000 cases, the serious-minded medical man, relieved of the tempest, may calmly take stock of twilight sleep's achievements.

A harmless anesthetic applicable in childbirth has been wished for by every obstetrician, for harrowing indeed is the long-drawn-out suffering of the parturient woman. The announcement that a safe and effective narcotic had been discovered would ordinarily have been hailed with joy by the entire medical profession, in spite of the oft-repeated accusation that physicians at large are ultra-conservative and averse to radical changes. The old charge that doctors were forced by public clamor to accede to the use of ether and chloroform was true, but with the development of the means of communication, with the rapid changes in all branches of science, especially of the medical sciences, the profession has promptly and readily adapted itself to useful innovations. Why, then, has the announcement of twilight sleep produced such a tempest in a teapot? Why has it given rise to such acrimonious discussion. To the unprejudiced medical mind the answer is plain.

The first announcement of twilight sleep caused numerous European clinics to test—and later to reject—it. Today we are told that these tests were not conclusive either because, at the time, the method had not been elaborated or because the technic of its introducers was not accurately followed. The second recrudescence of twilight sleep was engineered in the fashion of a whirlwind political campaign or a publicity propaganda in the hands of magazine writers, lay newspaper editors and department store lecturers. Unfortunately, a not inconsiderable number of medical men, for more or less altruistic reasons, allowed themselves to be carried away by the furor, and advocated the use of twilight sleep after more or less trial of it. Some authors have reported large series of successful cases.

What does success with twilight sleep imply? The method admittedly fails in at least fifteen per cent. of cases; it is not applicable in multiparae who have short labors; it can be used only in hospital surroundings with sufficient assistance and with the continuous presence of the obstetrician. Twilight sleep is thus at once limited in its employment to a relatively small number of fortunately situated individuals, because for most women either the necessary financial means or the necessary hospital opportunities are not available.

The shortcomings and actual dangers of twilight sleep are not entirely new to the profession, because semi-narcosis by scopolamine-morphine combinations had been tested out in this country in obstetrics and in surgery long before Kroenig and Gauss exploited its use by their method in Freiburg. Scopolamine is notoriously variable in its effect on different individuals, in some producing the desired ideal amnesia, in others causing wild hallucinations and violent delirium. Not infrequently it requires the united efforts of several nurses and the obstetrician to hold down in her bed the struggling patient who, it is true, can not later recall these scenes. Asepsis is necessarily impaired by these struggles.

Even the advocates of twilight sleep will freely acknowledge its non-success in a certain number of women, the production of delirium in some others, the lack of self-restraint in all the patients and the non-applicability of the method in a fair percentage of cases. The advocates never mention the fact that Nature has also established a wonderful amnesia for the sufferings of parturition, so that a few minutes or hours later they are quite forgotten. How common it is, during a labor to hear the pain-stricken mother cry: "Never, never will I have another child!" And how common it is to hear the same mother say, as she smilingly views her newborn: "Next year, I hope it will be a boy."

To relieve the suffering and exhaustion of a prolonged labor it has been customary to give sufficient morphine to produce a few hours of rest or sleep. Recently the acuity of individual pains has been dulled by short inhalations of nitrous oxide and oxygen—a method perfectly controllable, and easily applicable in the home. All modern obstetricians in the concluding stages induce unconsciousness with chloroform or ether.

Considering the manifold humanitarian efforts of the medical profession, is it fair of the advocates of twilight sleep—which include pamphleteers, journalists, obstetricians, and women—to accuse those doctors who refuse to be carried away by public clamor of inhumanity and of unprogressiveness? This is not the first stampede engineered by Kroenig and Gauss. Not many years ago they would have had us lay aside the scalpel and treat *all* uterine fibroids by broadsides of *x*-ray. Still more recently they also adjured us to abandon the knife in cancer of the uterus and place all our hope in radium and mesothorium. The short time elapsed has already shown that their claims were exaggerated, their enthusiasm unwarranted. The same exaggeration will have to be discounted in connection with their twilight sleep, and even greater allowance must be made because of the way the method has been exploited by others, both in the profession and out of it.—ROBERT T. FRANK.

THE CONGENITAL THEORY OF HERNIA EVOKES AN ARGUMENT.

In the June issue of the JOURNAL we expressed the belief that the ordinary abdominal herniae are practically never traumatic in origin, that they are always present, partly or fully developed, before the effort or accident to which they so often are attributed; and we referred to the excellent article of A. V. Moschcowitz on The Relation of Hernia to the Workmen's Compensation Law as supporting our view. Passing from the practical (economic) aspect of the question to its purely scientific and speculative side, we said: "We are *strongly inclined* to go further than does Moschcowitz and to accept the congenital *theory* of herniæ, which assumes the presence in the hernial canal, from birth, of a projecting knuckle of peritoneum, which, however, may not become occupied by abdominal contents for many years." And we presented some of the many reasons why this theory is attractive.

Concerning this we have received the following letter:

New York, August 4, 1915.

Editor, AMERICAN JOURNAL OF SURGERY:

Absence from the city has prevented up to now my reading the valuable editorial entitled, "Are Ordinary Herniæ Ever Traumatic?", which appeared in the June number of your Journal, and which was evidently inspired by my article upon "The Relation of Hernia to the Workmen's Compensation Law." (*Medical Record*, April 3, 1915.)

Your editorial, however, goes much further than my article and dilates considerably upon the much discussed and moot question of the congenital theory of hernia. In previous publications upon the subject I have taken pains to emphasize the invalidity of the theory in general, except for such herniæ of the congenital nature of which there can be no doubt; I would mention, as such, merely the "congenital inguinal hernia" so-called infantile herniæ, herniæ into the funicular process, umbilical herniæ, and certain forms of diaphragmatic herniæ. I concede now, and have always conceded, that there exists the "possibility" that the ordinary or oblique inguinal hernia is also of a congenital nature, but I have also repeatedly shown that all convincing proof of this contention is lacking as yet. To sum up, I would say that this part of the question is entirely an academic one, which can be settled neither by your affirmative editorial writings, nor by my denials.

The editorial in question, however, not only assumes as proven the congenital nature of all oblique inguinal and umbilical herniæ, which, as been stated, may for the sake of peace, be conceded as debatable ground, but it goes yet further, and takes it for granted that the theory applies to direct inguinal and to femoral hernia as well. I am lead to this opinion by the following two statements: "The purely extraperitoneal forms of direct inguinal herniæ may likewise be assumed to exist, potentially, at birth—an assumption that best explains their frequent bilaterality." And further on "and for femoral herniæ it is not difficult also to conceive a small process of peritoneum existing at birth in the femoral fossa."

It is granted that it is not difficult to conceive such a theory, but in modern times surgical pathology requires much stronger evidence than the bare conception of a possibility before being accepted as valid. Murray's article (*Annals of Surgery*, vol. LII, p. 668) upon this subject is not in the slightest degree convincing. I maintain, therefore, my oft-made statements, that thus far all proof of the congenital nature of direct inguinal or femoral hernia is still lacking.—A. V. MOSCHCOWITZ.

Although this communication does not throw any light upon the subject, we print it because on the subject of hernia Moschcowitz is, we believe, eminent.

Dr. Moschcowitz read the editorial a bit hastily, we think. We did *not* "assume as *proven* the congential nature of all oblique inguinal and umbilical herniæ." On the contrary, we referred to it

only as a *"theory," an "assumption," "an hypothesis obviously difficult to prove."* Nor did we "take it for granted that the theory applies to direct inguinal and to femoral hernia as well." Continuing clearly within the realm of speculation we indicated that the theory might be extended to these two latter varieties of hernia by *assuming* the congenital existence, potentially, of the extraperitoneal (direct) inguinal hernia and by *conceiving* a peritoneal projection in the femoral fossa at birth. (We quite appreciate that for these forms of hernia the congenital theory has no such support in fetal processes as have oblique inguinal and umbilical herniæ.) We hope that not many others of our readers think that by "assuming" and "conceiving" we mean "accepting," "believing" or "proving."

Moschcowitz says, "It is granted that it is not difficult to conceive such a theory"; that is all we said. He says the congenital theory of herniæ has not been proven; so did we. He says that the question is entirely an academic one; we said it is "of scientific rather than of practical interest." We admit that it can not be settled by our "affirmative editorial writings" and he admits that it also can not be settled by his denials. And so, aside from the fact that we "strongly incline to accept the congenital theory" and he admits its possibility and debatability, but also asserts its invalidity, we see no essential difference between Moschcowitz's stand and our own.—W. M. B.

Surgical Suggestions

In surgery, as in internal medicine, the thermometer is an indispensable instrument of diagnosis. The surgeon who, without examining his patient, attributes an unexpected post-operative rise of temperature to "the hot weather," "constipation" or "too much company" may find it difficult to explain later why he did not at once recognize the wound infection, phlebitis, pneumonia, cystitis or other complication that had developed.

There is a comparatively rare type of pelvic infection in women in which the pus points posteriorly through the sacro-sciatic foramen. Such a condition may be suspected if, after confinement, for example, an irregular fever is associated with pain in the lower lumbar and sacro-iliac regions, perhaps radiating into one or both thighs. Such an abscess may not be recognizable by vaginal or rectal palpation.

Surgical Sociology

Ira S. Wile, M. D., Department Editor.

Some Benefits of Asepsis.

The general benefits which have accrued from the development of aseptic surgery are well illustrated by the observations of Brewer (*Journal of American Medical Association,* April 24, 1915). In a report in the *New York Medical Journal,* May 2, 1896, Brewer bravely announced the fact that on his surgical service at the City Hospital for a period of 6 months, 29 per cent. of all clean operative wounds became infected. It must be recalled that at this period of surgery, modern sterilizing autoclaves were not to be found in hospitals. The degree of attention at present given to the preparation of ligatures and suture materials was absent. The modern training of surgical assistants was limited in extent and inferior in character.

During the following year, after a thorough bacteriological investigation of methods and material, and after the institution of a complete sterilizing equipment, the infected wounds, previously clean, fell to 9 per cent. In 1898 after the employment of sterile rubber gloves for the surgeons, assistants and nurses, the percentage of wound infections was reduced to 7. During the two ensuing years this percentage fell to 3.2. Surgery has now achieved a point in civil life where infection of clean cases is regarded as a reflection upon the technic of the surgeon.

The degree of care which must be employed in operating rooms varies naturally with the type of institution and the character of patients received. So many persons are involved in aseptic operative work that it is frequently difficult to determine upon the person responsible for the fault in technic when infection occurs. Hence censure always falls upon the operating surgeon.

That perfect asepsis may be maintained is splendidly demonstrated by the figures of Dr. Brewer of the cases operated on his service upon from January 1st to July 1st, 1914. Laying aside 4 patients who were infected in operations under local anesthesia by reason of a contaminated novocain solution, there was only 1 infection in 516 cases, or a little less than 0.02 per cent.

Interesting as a report of this nature may be from the standpoint of surgical technic, it possesses even more significance with relation to the welfare of the patients themselves. Primary healing of wounds means a shorter period of disability, less drain upon nutrition, a more rapid convalescence, a briefer stay at the hospital, decreased anxiety for the family as well as decreased expense. The hospital gains not alone through the decreased per capita cost for dressings, nursing and attendants, but is able to receive a larger number of patients per annum and establishes a reputation for clean and efficient surgical work. This last, of itself, is by no means an unimportant asset for any hospital.

With adequate hospital organization and sufficient funds to eliminate short cuts in the sterilization of materials, to develop systematic training of surgical assistants, it is possible to establish a surgical techinic that will be eminently satisfactory up to the point of the actual technic of the operator himself. In the last analysis, the surgeon must bear the brunt of the shortcomings of his assistants and share with them his successes. The social benefits of the aseptic technic is to be regarded as of even greater importance than the mere determination of statistics with reference to the incidence of wound infection through lapses of hospital machinery and surgical skill.

THE TRAINING OF HEALTH OFFICERS.

The transformation which is slowly being evidenced in medical functions is well demonstrated by the new regulations authorized by the Public Health Council for New York State Health Officers. Beginning November 1st, 1916, local health officers must be specially qualified for their work. They must possess a preparation not generally obtainable, unfortunately, in medical colleges that will enable them to intelligently attack public health problems.

The prevention of epidemics, lay education in sanitary doctrine, together with a practical working knowledge of laboratory methods are among the rational subjects familiarity with which is to be insisted upon for public health officers. The qualifications for health officers as stated are as follows:

I. They shall be graduates of medicine of not less than three years' standing;

II. They shall when appointed be not less than twenty-four nor more than sixty-five years of age;

III. They shall have complied with one of the following requirements:

(a) They shall have taken a correspondence course in public health of one year with at least one week of practical demonstrations in laboratory and field work, both correspondence course and demonstrations to be approved by the Public Health Council, with examinations and a certificate; or

(b) They shall have taken a course in public health of at least six weeks, including practical laboratory and field work, with lectures and reading at an educational institution, such course to be approved by the Public Health Council, with examinations and a certificate; or

(c) They shall have submitted evidence satisfactory to the Public Health Council of special training or practical experience in public health work, with examination if required by the Council;

Provided, however, that under special conditions specified in writing by the local board of health or other appointing power or by the health officer, any of these qualifications may be waived by the Public Health Council.

In addition to the qualifications demanded by these resolutions it would be well if some knowledge regarding the nature and value of hospital organizations were insisted upon.

The public health officer in a small community is charged by the very nature of his position with manifold responsibilities not alone for the maintenance of the public health and the prevention of disease, but for the prevention of accidents and the organization of institutions for adequately coping with the dire results of industrialism.

Cooperative schemes for small communities may well be fostered through health officers with a view to establishing cooperative ambulance systems, first aid stations, and small general hospitals supported by several communities in the interests of all. Despite all "safety first" propaganda, accidents are bound to occur, and it is important that as much attention be given by health officers to this phase of the public health service as to securing adequate and just provision for the care of the abused leper or typhoid carrier.

Book Reviews

Text-Book on Nervous Diseases. By G. ASCHAFFENBURG, H. CURSCHMANN, R. FINKELBURG, R. GAUPP, C. HIRSCH, FR. JAMIN, J. IBRAHIM, F. KRAUSE, M. LEWANDOWSKY, H. LIEPMANN, L. MÜLLER, H. SCHLESINGER, S. SCHOENBORN, H. STARCK and H. STEINERT. *Authorized English Edition,* edited by CHARLES W. BURR, B.S., M.D., Professor of Mental Diseases, University of Pennsylvania. In two octavo volumes; 1132 pages; 156 illustrations. Philadelphia: P. BLAKISTON'S SON & Co., 1915.

The eminence of the authors of this composite text-book needs no comment. To those familiar with this standard work in the German its excellence need not be pointed out. The translation has been done with care and judgment, and this American edition is altogether acceptable. To surgeons interested in this field we warmly commend the admirable sections dealing with the diagnosis and localization of various surgical affections of the brain and cord. The other diseases of the nervous system are also admirably dealt with.

Sleep and Sleeplessness. By H. ADDINGTON BRUCE, A.M. Duodecimo; 219 pages. Boston: LITTLE, BROWN & Co., 1915. $1.00.

This book bears all the marks of having been written by a psychologist rather than a physician, thus narrowing its scope and utility appreciably. But within its limited sphere it answers all purposes satisfactorily. The author accepts Sidis' view that monotony is the central fact in the causation of sleep. His discussion of dreams has little in it of Freud's theories. When he comes to the topic of sleeplessness, he discusses only simple insomnia, excluding that associated with disease entirely. In the chapter on the treatment of sleeplessness, the author correctly warns against the indiscriminate use of drugs, and recommends treatment by psychology and hypnotism.

Essentials of Laboratory Diagnosis. By FRANCIS ASHLEY FAUGHT, M.D., Director of the Laboratory of the Department of Clinical Medicine, and assistant to the Professor of Clinical Medicine, Medico-Chirurgical College, Philadelphia, etc., etc. *Fifth Edition.* Duodecimo; 450 pages; 10 plates (four in colors), and 58 text engravings. Philadelphia: F. A. DAVIS Co., 1915. $3.00.

This is one of the most satisfactory manuals upon laboratory diagnosis with which we are acquainted. The descriptions are terse and clear; there is no redundant matter, and the book has a thoroughly modern flavor. It is

questionable, however, whether sphygmomanometry and sphygmography should be included in a work of this character, even though the author is, as all know, especially interested in the subject. The illustrations are good, but those of instruments are too largely predominant. The work shows appropriate revision.

The Collected Papers of the Mayo Clinic, 1914, reviewed in the August issue, is $7.00 in half morocco, $5.50 in cloth.

Books Received

A Text-book of Chemistry and Chemical Uranalysis for Nurses. By HAROLD L. AMOSS, S.B., S.M., M.D., DR. P.H., Physiological Chemist, U. S. Bureau of Chemistry, etc. Duodecimo; 268 pages. Philadelphia and New York: LEA AND FEBIGER, 1915.

Mothercraft. By SARAH COMSTOCK. Duodecimo; 214 pages; illustrated. New York: HEARST'S INTERNATIONAL LIBRARY CO., 1915. $1.00.

The Model T Ford Car, Its Construction, Operation and Repair. By VICTOR W. PAGE, Author of "The Modern Gasoline Automobile," etc. Duodecimo. 300 pages; over 100 specially made diagrams and half-tone illustrations, with two large folding plates. New York: THE NORMAN W. HENLEY PUBLISHING COMPANY. Price, $1.00.

A New Ford Engine Chart. By VICTOR W. PAGE. Location of Ford Engine Troubles Made Easy. Size 25x38 inches. Printed on Heavy Bond Paper. New York: The Norman W. Henley Publishing Company. 25 cents.

Progress in Surgery

A Résumé of Recent Literature.

Ligation of the Splenic and Gastro-epiploica Sinistra Arteries in the Surgery of the Spleen. J. C. A. GERSTER, New York. *Journal of the American Medical Association,* August 7, 1915.

Gerster believes that ligation, temporary or permanent, of the arterial supply of the spleen at certain more accessible points than the deeply situated splenic pedicle will greatly facilitate matters in difficult splenectomies. These points are (1) the splenic artery close to the celiac axis, and (2) the gastro-epiploica sinistra, where it reaches the stomach wall from the splenic artery. The celiac axis is readily exposed through an opening in the lesser omentum just above the lesser curvature of the stomach, and fully two inches of the splenic artery lie just beneath the posterior parietal peritoneum. This, however, does not shut off the entire arterial supply of the spleen, because of the free anastomosis of the gastro-epiploica sinistra (branch of the spleen) with the gastro-epiploica dextra. He proposes, therefore, that the gastro-epiploica sinistra be ligated where it reaches the stomach wall and just before it begins to send off branches to the anterior and posterior surfaces. This point is not so accessible as that described in the course of the splenic, but it is readily brought into view by drawing the stomach and left margin of the great omentum over to the right. The vasa brevia should theoretically also be ligated, but the anastomotic communications are rarely sufficiently large to demand this. There may still remain some hemorrhage from torn veins, but it is easier to control. After the spleen has been removed, the bleeding points in the stump of the pedicle can be recognized and ligated. If the ligatures on the gastro-epiploica sinistra are merely temporary, they may be released in succession so that if any minor arteries have been overlooked they can be caught up and tied. If, however, they are left untied, the pancreatic and vasa brevia branches of the splenic will be permanently put out of commission, but this should not lead to serious consequences, and the pancreas will still have a good arterial supply. Ligature of the splenic arterial supply as a substitute for splenectomy, as Lanz suggested, is believed by Gerster to be simpler, less shocking and more certain than an attempt to ligate the vessels in the pedicle when this is deeply situated and difficult of access.

Studies in Pancreatic Disease. E. B. CROHN, New York. *Archives of Internal Medicine,* April 15, 1915.

Crohn arrives at the following conclusions:

1. The quantitative examination of duodenal ferments is the most rational and accurate method of studying the external secretion of the pancreas. Diminution of such enzyme activity of the pancreas is a reliable sign of organic disease of the gland. Occasionally, though rarely, a diminution of ferments occurs as a symptom of advanced organic disease elsewhere in the body. Roughly, the diminution of ferments is directly proportional to the extent of organic destruction which has taken place.

2. The absorption of fat and nitrogen from the intestine is independent of the condition of the external secretion, or even of its presence. Absorption may be poor with an intact gland, or good with a gland of which only a fragment survives the disease. The functional activity of the gland, not its organic condition, determines the degree of absorption. This is probably controlled by an internal secretion or hormone.

3. Duodenal ferment tests give the index of the organic condition of the gland. Absorption tests give the index of the functional activity of the pancreas.

A Diagnostic Sign in Inflammatory Conditions and Traumatisms in and About the Liver. MILTON BOOKMAN, New York. *Medical Record,* July 24, 1915.

This sign consists in making traction upon the round ligament of the liver by inserting the finger in the umbilicus and drawing sharply downward. If pain in the hepatic region is thereby caused, the test is positive. Bookman has found this test positive in some cases of acute cholecystitis, cholelithiasis, abscess of the liver, and in a case of traumatic laceration of the right coronary ligament. Further observations are necessary to prove the value of the test.

Basic Considerations in the Roentgen Study of Intestinal Stasis. J. T. CASE, Battle Creek, Mich. *The Pennsylvania Medical Journal,* June, 1915.

In a very complete and profusely illustrated article, Case gives an excellent survey of his methods of examining the gastro-intestinal tract by means of the *x*-ray, and of his interpretation of the findings.

He administers an *x*-ray test meal for breakfast. This consists of hot and cold food with two ounces of barium sulphate. Observations are made immediately after the breakfast and at the second, fifth, tenth, twenty-sixth, thirty-fourth and fiftieth hours. The following morning the colon is injected with an opaque enema. This is done between 9 and 11 A. M. At 7.30 A. M. the patient is given three enemata of warm water so as to insure emptying the colon. At 8 or 8.30 he takes his regular breakfast. Fluoroscopy is recommended as far more satisfactory than plates, since the important point is not the position of the various portions of the gut, but how they functionate. Only the first examination is made with the patient upright, the remainder being made in the recumbent position. The stomach should be empty after four and one-half hours at which observation the head of the barium column should have reached the cecum. The entire meal should have passed into the colon by the eighth or at most the tenth hour, when the head of the barium column should have reached the middle of the transverse colon. The iliac colon should be reached nine

to sixteen hours after ingestion, and the colon should be emptied after thirty-six hours.

The most frequent finding in constipated individuals is a marked spasticity of the left half of the colon.

In practically all cases of stasis in the proximal colon, the appendix shows signs of chronic periappendicular adhesions.

The author lays great stress on incompetency of the ileo-cecal valve in the production of stasis and thinks this of more importance than Lane's kinks or the various pericolonic membranes. Stasis in a prolapsed transverse colon is practically never encountered. The writer does not seriously consider ptosis of the transverse colon as a cause of constipation, although it may be an associated condition. On the whole, the author is forced to conclude that in the majority of cases of constipation, the cause is located below the crest of the left ilium, and if not primarily due to spasticity, at least exhibits spasticity as an important factor.

Syphilis of the Stomach. F. Smithies, Chicago. *Journal of the American Medical Association,* August 14, 1915.

The results of a clinical study of twenty-six cases of dyspepsia associated with positive Wassermann-Noguchi reactions are reported by Smithies. In all these the diagnosis of syphilis was highly probable or was confirmed by exploratory laparotomy. He remarks that gastric syphilis is by no means so rare as was formerly considered, as no less than twenty-five cases have been reported in the United States during the past six years. The present series of twenty-six are taken from the examinations of 7,545 cases, making a percentage of about 0.34. There were gastric symptoms in a much larger number, a number of whom were syphilitic. The lesion may be congenital or acquired, and may produce several pathologic types, which may be summarized as those associated with chronic gastritis, ulceration, gastric tumor and perigastritis, often with an involvement of adjacent organs. Fifteen of the patients were men, eleven women. The minimum age was 20, the maximum 66, the average age being slightly greater in the men than in the women. Difficulty was met in some in obtaining a history of the primary sore, especially so in females, and the period passed before gastric symptoms is only approximately correct. The minimum period was four years in both sixes, the maximum for men thirty-eight years, and for women forty-five years. There were no congenital cases, and in all but two, the gastric disorder appeared in the tertiary stage. Only two of the whole number had had a thorough treatment of mercury and iodids. Three had taken salvarsan for "anemia," within four years of their coming under observation. The average duration of the dyspepsia was 8.7 years for the group, with practically no difference in the two sexes. The cases are classed in three groups: (1) Those in which a persistent gastric derangement appeared in persons previously healthy; (2) cases in which a constant dyspepsia followed years of antecedent intermittent indigestion, and (3) cases in which continuous gastric upset occurred in persons who had stomach trouble for some past period, but who had been free for some time. Each of these classes was studied in detail. In the second type the symptoms closely simulated gastric ulcer, but the gastric analysis revealed moderately high total and free hydrochloric acid with no increase above the normal formol index, and only irregular manifestations of positive Wolff tests. Even laparotomy sometimes left the matter in doubt. In the third group these symptoms were irregular, but the terminal stage laparotomy findings closely resembled those of the second type. The roentgenoscopy afforded no pathognomonic signs; but with a positive Wassermann-Noguchi test they afford a positively certain diagnosis. The best results in treatment were obtained by intravenous injection of salvarsan followed by a thorough mercurial course and iodids. Iron and arsenic are sometimes needed for the coincident anemia, and the dyspepsia may also need attention. Smithies thinks one should be cautious in making any definite statements about the cure of gastric syphilis, but four patients of the total twenty-six were relieved for so long as a year. Twelve patients appeared to be improved, and three were not benefited.

Subdiaphragmatic Inflammation, With a Syndrome of Physical Signs and Spontaneous Recovery Without Suppuration. R. I. Lee, *Journal American Medical Association,* April 17, 1915.

Lee discusses the subject of subdiaphragmatic inflammation occurring with a syndrome of physical signs and ending in spontaneous recovery without suppuration. He has recently had the opportunity of observing four cases of this type which he here reports. They seem, he says, to form a clinical entity differing from the frank suppurative conditions occurring in this region which, as Picque says, have an absolutely bad prognosis without surgical interference. All the cases here reported were alike in physical signs and Roentgen-ray showings. It was the ray that definitely decided that the condition was subdiaphragmatic. The last two cases were recognized clinically, and Lee says that it is possible or probable that many cases escape diagnosis from lack of roentgenization and that this class is larger than it appears to be. The roentgenogram is that of subdiaphragmatic abscess. Each case is commented on by the author after the case history, and the points of special interest are noted. This study, he says, contributes very little to the etiology, but it seems obvious that it must be of an infectious nature. In all cases the preliminary diagnosis was a lesion of the lungs or pleura. He also reports two cases of suppurative process below the diaphragm from the records of the Boston Hospital. Both patients recovered.

The Management of Burns. A. Ravogli, Cincinnati. *Journal of the American Medical Association,* July 24, 1915.

Ravogli says that to establish a line of management of all burns a priori would be somewhat preposterous. Following the doctrines of Hebra and accepting his division into three degrees, the pathologic process in each is different. In the first two there is inflammatory reaction of the skin, in the third degree there is primary necrosis. The degree of the burn, the medium producing it, the depth of the injury, the extent of the skin burned, and the condition of the nervous system of the patient all influence the treatment. In general, we can say the best treatment is that which favors the sloughing of the burned skin, which maintains the sterility of the resulting wound, and promotes granulation and the newly forming epidermis. The burn is always serious from the resulting shock and the action of poisonous substances arising from the burned skin. The treatment of the local lesion is only a part of that which is necessary; the general systemic effects have also to be taken into account. In severe burns the pain is intense, but after the burn is dressed and an injection of morphin is given, one-fourth grain, quiet is produced and some patients are able to give details of the accident. After a severe burn the patients do not usually void urine, and if they do, it is scanty and contains either blood or albumin. Sometimes even an apparently light burn may be dangerous to life. Removing the burned skin and deep blisters is risky and useless, as is also the washing with benzin or gasoline. Time is necessary to give the burned tissues a chance to slough off, and even in second degree burns it is better to puncture the large blisters to let out the serum, leaving the old skin to protect the denuded papillæ of the derma. A few hours after the burn fever occurs, and when the burned tissues begin to slough off, it shows the general systemic reaction. In the third degree burn the skin has been disorganized, and there is mortification of the tissues. The poisonous elements are formed in the skin and may be excreted by the urine, and this becomes poisonous. It is our duty to help Nature remove the burned tissue. An inflammatory process starts around the eschar with a groove separating it from the healthy tissues. The suppuration is effected in from eight to twelve days, and the resulting granulating wound is left with an irregular depth. Healing progresses from the periphery and from islands of epithelium. Several illustrations are given to show these processes. In a first degree burn the application of dry powders, such as talcum powder, bismuth or alum, is advised. In case of severe pain, Ravogli recommends application of compresses, moistened with a solu-

tion of aluminum subacetate, 2 to 5 per cent., and in second degree burns he applies the same. When the blisters are distended with serum he drains off the fluid by puncture. Oily substances, such as carron oil, etc., must be avoided as possibly aiding infection. When shreds of epidermis are easily detached, they are cut off with scissors and a thumb forceps. The Sneve treatment exposing the surface to plain air for an hour at first, and later two or three hours, is very useful. The treatment for a third degree burn is nearly the same. Recovery is obtained through cicatrization. The plain air and sunlight stimulate the granulating surface. It must not be forgotten that the granulations need to be touched with a solution of silver nitrate every other day to prevent irregular or keloidal scar. After exposure for from two to three hours the wound must be covered with a suitable dressing like a 2 per cent. borated petrolatum on English lint. When the granulations are pale and show a tendency to pus formation, the application of a mixture of castor oil and Peruvian balsam also gives good results. It cannot be continued over a long time on account of its producing irritation. In burned areas of large size without tendency to epidermis formation, a few Reverdin epidermic grafts will help. Any extensive burn of whatever degree has a systemic reaction. In the beginning the patient may suffer from shock, though in Ravogli's experience this has been rare. More often he has seen gastroduodenal ulceration with continuous vomiting and sometimes nephritis and pneumonia. The fever following the burn rises and falls somewhat like that of typhoid. In all his cases the administration of chinin has been very useful, and he considers it one of the best antiseptics. In nephritis the intravenous injection of Fisher's solution with the internal administration of digitalis has been very helpful, and in a few days the urine was clear of albumin. Gradually as the patient improves, when the fever is gone, a substantial diet with some iron tonic preparation to improve the general condition of the patient must be given.

Nerve Suture for Bullet Wounds. R. A. STONEY and H. MEADE, Dublin. *British Medical Journal,* July 3, 1915.

The function of a nerve may be interrupted without material injury, in which case the loss of function is only partial and returns early, probably always within a fortnight or three weeks.

When a nerve is partially or wholly divided loss of function is marked and permanent, and may even tend to increase. In these cases it is useless to expect spontaneous regeneration owing to the distortion and separation of the cut ends and the great development of dense fibrous tissue which appears to follow in all cases.

When a nerve is divided, the sooner an operation for its suture is performed the easier it is, and the greater the likelihood of an early cure. In cases, however, where the wound is septic, it may be advisable to allow time for the wound to heal.

Even when nothing has been done for several months, there is still a chance of a successful result if late suturing is undertaken, so that no case need be looked upon as necessarily hopeless.

Some Factors Concerning Amputations with Reference to the Present War. P. L. MUMMERY, London. *British Medical Journal,* June 5, 1915.

Inasmuch as the weight-bearing part of the stump is not on the end, but a greater or lesser distance above the end, it is a matter of little consequence that the scar is over the end of the stump. The surgeon should see, however, that the scar is not on the posterior aspect of the stump, because when the artificial leg is applied, this is the area of most friction. There should be no "point of election" in amputating. The "point of election" should be that giving the greatest possible length of stump. The best method of amputation is the circular, because the chances of the ends of nerves being caught in the scar is less than by flap methods. Finally, the artificial limb should be applied as early as possible, before atrophy of the muscles occurs from disuse.

Wounds Received in Battle. Surgical and General Observations Made During Recent Service in Austria. L. MILLS, Los Angeles. *Journal American Medical Association,* April 10, 1915.

Mills gives an account of his surgical and general observations made in Austria in the present war. While his specialty was eye cases, he was also employed in general surgery, and including 322 personal cases, he had the privilege of observing about 1,100 cases of projectile wounds and war injuries of various kinds. The large excess of bullet and shrapnel wounds seen in the Vienna hospitals, over wounds produced by shells, the reverse being the case on the French front, was due, he says, to the more mobile type of operation on the Russian border, shrapnel being generally employed against masses of troops in the open. The high percentage of infection accords with the English observations of the greater liability of shrapnel and shell wounds to such complication. Three out of four patients with tetanus recovered under treatment with antitoxin and chloral—a very good proportion. The diagnosis of war psychosis (traumatic neurosis) was made in only six cases, though the patients were often nervously upset by their wounds. Wounds of the left hand and forearm were very common, which he believes agrees with the experience elsewhere during this war. Several interesting vertebral wounds are mentioned, which recovered. Practically every close range shot of the cranium is fatal at once, from complete disruption of the brain, and fragmentation of the skull; but in wounds of the neck, the immunity of the great cervical vessels and nerves seemed remarkable. These are only a few of the points of interest which space permits us to mention in an abstract of this detailed paper. Mills ventures to say that the final statistics of this war will be quite different from any that have preceded it. The proportion of permanently disabled men seems greater than ever, and the immediate mortality is especially high.

Treatment of Gunshot Wounds of the Knee Joint. H. M. W. GRAY, France. *British Medical Journal,* July 10, 1915.

The war experiences of the author lead him to combat certain erroneous doctrines current in the treatment of gunshot wounds of the knee: 1. That suppurative infections of the joint demand free and prolonged drainage. 2. That drainage tubes are the best means for procuring this. 3. That these tubes must be large and must be inserted deep into the joint. 4. That strong antiseptic treatment is necessary to overcome this infection. On the other hand, he emphasizes certain important principles: 1. That all wounds of the joint demand immediate immobilization. 2. That all foreign bodies should be removed. 3. That the skin and superficial tissues must be excised in order to prevent infection from these sources. Gray summarizes his method in the following brief synopsis:

Excise wound of skin and superficial soiled or necrotic muscle and fascia. Enlarge wound freely if necessary. Remove foreign bodies (previously localized by *x*-rays) after possible enlargement of wound in synovial membrane. Flush synovial cavity with 5 per cent. saline solution. Thoroughly remove blood clot. In very acute cases make fresh incision. Trim edges of wound in synovial membrane, suture if sepsis not acute. Insert drainage tube down to but not through wound in synovial membrane. Fill rest of wound fairly firmly with "tablet and gauze" dressing. Inject formalin-glycerin or ether, etc., through fresh puncture. Clean and redisinfect surrounding skin. Superficial dressings, light bandage. Immobilize in suitable splint. If this fails, free arthrotomy, possibly amputation.

Frontal Sinus Suppuration with Results of New Operative Procedure. H. A. LOTHROP, Boston. *Journal of the American Medical Association,* July 10, 1915.

Lothrop describes a method of operating for chronic frontal sinusitis in which all steps of the operation are open and a minimum scar is left, while the maximum opening into the nose remains. The disorder is kept up by

infection and obstruction, but by very free drainage and the sinus made easily accessible to treatment, the fistulas will close, subjective symptoms disappear and the discharge cease or be reduced to a minimum. In this paper he gives only the steps of the technic as based on the results of all the operations, a number of which are reported. It has been changed in certain details and is given at considerable length, requiring the illustrations for perfect clearness of detail. It consists practically of preliminary treatment intranasally, including removal of the anterior end of the middle turbinate and breaking up if needed of some of the neighboring ethmoid cells. Roentgen-ray examination should also be made with both lateral and anteroposterior views. The patient is etherized and put in a position midway between sitting and supine. The use of epinephrin is advised to avoid the annoyance of blood. A single curved 1-inch incision is made in the inner portion of the eyebrow, limited externally by the supra-orbital arch in order to avoid the nerve. The bone is bared of periosteum over the sinus, which is entered with a chisel and enlarged by rongeurs to make an oval opening. The region is explored with a probe, and pus, granulations and polypi gently removed and the probe passed through the ostium into the nose and left *in situ* as a guide. The cells on the floor of the sinus are broken up with small curved curets, carefully avoiding the posterior angle of the sinus. The operation is completed with the burr drills devised by Tilley and Ballinger for antrum operation and by rasps devised for this operation by H. A. Lothrop, using the rasps first. The interfrontal septum should be perforated and burred away so that the other sinus may be explored and the perpendicular plate of the ethmoid also removed by the burr. The use of the combined floor of both sides has been shown to be best even when only one sinus is affected. When sufficient bone has been removed from the perpendicular plate and the cells opposite the lacrimal bone, the neighboring ethmoid cells have been broken up with the large burr, the skin incision is to be closed without drain, and all tampons removed. Blood pressure may be lessened by propping up the patient. A compress bandage should be applied for a day or two, and after that a common dressing. If the antrum has served as a reservoir it is wise to make a large opening under the inferior turbinate. The subsequent treatment consists in keeping the nose clean.

A New Non-Operative Treatment of Disease of the Accessory Sinuses of the Nose. Preliminary report. L. A. COFFIN, *Medical Record*. April 3, 1915.

By means of suction, Coffin is able to clean out the accessory cavities of the nose of purulent material without any further attempt at drainage. Then with positive pressure produced by the oxygen tank, he is able to throw medicated vapors into these cavities. After so doing, he is sometimes enabled to suck out considerable quantities of pus which remained behind. "The pressure current seems to sweep the pus from the walls of the cavities into such a position that the suction current can pick it up." The details and description of the apparatus will be given in a subsequent communication.

The Post-operative Antiseptic Treatment of the Tonsillar Fossae. G. P. MARQUIS, Chicago. *Journal of the American Medical Association*, July 10, 1915.

To prevent the inconvenient complications sometimes following tonsillar operations, such as reaction along the faucial pillars, edema of the uvula, soreness of throat, difficulty in swallowing and impaired speech, which he attributes to infection, Marquis recommends applying a 50 per cent. solution of tincture of iodin to the fossae immediately after removal of the tonsil. In spite of clean instruments and aseptic technic we have in the site of the removed tonsil an open space for invasion by the pathogenic bacteria always present in the oral cavity and the use of a powerful germicide is directly indicated. Of course all hemorrhage must be first controlled by a tampon saturated with alcohol, or if this fails, by a hemostat to the bleeding point. The fossa is then painted with the iodin solution, which is also carried onto the pillars and the uvula.

The Operative Removal of Large Intrathoracic Thyroids. (*Die operative Entfernung grosser Intrathorakaler Strumen.*) W. JEHN, Zürich. *Deutsche Zeitschrift für Chirurgie*, March, 1915.

Intrathoracic thyroids exert pressure on the trachea and the large vessels in the mediastinum. As a consequence the patient presents a picture of marked dyspnea and cyanosis with evidences of pronounced venous stasis and edema. For this condition relief is imperative. Jehn claims that with proper surgical technique and under favorable anesthesia these intrathoracic thyroids may be removed with safety and dispatch, and he cites five cases operated upon and relieved by Sauerbruch; one of these cases, however, died three weeks after operation from pulmonary embolism as confirmed by autopsy.

A low semi-circular incision was employed, the sternum in its upper portion then split longitudinally for 4 to 6 cm. This at once widened the upper thoracic opening by 1.5 cm. and almost immediately diminished, to a large degree, the dyspnea and lividity so prominent before this step was made. In all the cases oxygen was used during the operation under positive pressure (below 3 cm. water pressure, Tiegel apparatus); in only one case was a general anesthetic administered; the other cases received local anesthesia.

Fissuring the sternum alleviated the patient's distress, produced an increase of room in the thorax and so reduced the pressure effects, and lastly, permitted the introduction of the index finger into the upper mediastinum for exploration and enucleation of the intrathoracic portions of the thyroid tumor. Post-operative *x*-ray pictures confirmed the belief that the tumors had been removed in toto. Removal by morcellement is to be condemned because of the danger of hemorrhage in these vascular growths.

Luetic Bursopathy of Verneuil; Report of a Case of the Congenital type. W. P. CONES, Boston. *Boston Medical and Surgical Journal*, July 1, 1915.

This is an indolent affection of the bursae, and is independent of syphilitic arthritis. The syphilis may be congenital or acquired. The disease must be differentiated from subperiosteal abscess near the joints and from congenital specific arthropathy. While syphilis is the underlying cause, trauma is often the exciting cause. The Wasserman is frequently negative in these cases, but the diagnosis may be made by *x*-ray examination. "An indolent bursitis in a child, therefore, with or without traumatism, and with or without obvious signs of congenital specific disease, should arouse suspicion that we are dealing with a specific bursopathy of verneuil. The author's case was a child, 13 years of age, who for two months had a marked swelling at the site of the olecranon bursa. The operation revealed gummy material and carious bone. The condition did not prove until specific treatment was given, when the result was magnal.

The Internal Aspects of Prostatic Suppuration. HARLOW BROOKS, New York. *Medical Record*, July 17, 1915.

Brooks calls attention to the frequent simulation by prostatic abscess of typhoid fever. The local symptoms are often absent or so slight as to be overlooked. On the other hand, there is an irregular fever, marked prostration and sweating. Curiously, the pulse is usually slow and the blood count is normal or even below normal, thus making the similitude more striking. Rectal examination usually clears the diagnosis.

Gluteal Myositis. N. SHARPE and P. W. ROBERTS, New York. *Medical Record*, June 26, 1915.

These authors describe 16 cases of a peculiar malady, characterized by pain, sharply localized, in the gluteal muscles. Usually the muscles envolved are the gluteus medius and tensor fasciae femoris; occasionally the gluteus minimus and gluteus maximus. There is no induration or other evidence of acute inflammation. The cause is in nearly all instances a strain (excessive walking, lifting, etc.). Occasionally the gastro-intestinal tract

is disordered. In two cases, sciatica followed, due, according to the authors, to compression by the swelling of the muscle. In no instance was "rheumatism" the exciting cause. The only treatment that the authors found efficacious was deep massage. The majority required four to six weeks of treatment.

A Study of General and Localized Effects of Intravenous Injections of Colloidal Copper and Casein in Cases of Human Cancer. C. B. McClurg, W. O. Sweek, H. N. Lyon, M. L. Fleischer, and Leo Loeb, St. Louis. *Archives of Internal Medicine,* June 15, 1915.

This is a model report in every respect. The cases were well observed, and the biological effects of the injections were carefully studied. For our purposes only the clinical results need be reviewed. It can be definitely said that intravenous injections of colloidal copper have a definite effect in a certain number of tumors, while in others they are without any noticeable effect. The authors report a number of cancers of the skin that seem to have been cured by these injections, while in others there has been profound improvement. The injections of casein, on the other hand, had little or no effect upon the progress of the tumors.

Blood Transfusion; Indications; Results; General Management. R. Ottenberg and E. Libman, New York. *American Journal of Medical Sciences,* July, 1915.

This paper, containing their observations upon 189 cases, is so full of data that a complete review is impossible within the limitations at our command. We content ourselves, therefore, with a report of their more interesting conclusions. The most brilliant results were obtained where the indication for transfusion was hemorrhages. In hemorrrhages from gastric and duodenal ulcer the results were brilliant; 12 of 14 cases recovered, and in all the conditions were desperate. In hemorrhage from typhoid fever, transfusion unquestionably saved life in two out of seven cases. "In all typhoid cases, the first appearance of blood in the stools should be an indication to make preparations so that a transfusion can be done, if needed, at very short notice." Ectopic pregnancy is an ideal indication for transfusion. The authors found transfusion of considerable value as a preliminary to surgical operations and against post-operative hemorrhage. In shock, the authors found transfusion of little value. In the various hemorrhagic conditions, such as purpura hemorrhagica and hemophilia, transfusion gave excellent results. In the latter condition, especially, the authors believe that repeated transfusions done at longer and shorter intervals may enable these patients to reach adult age. In combating the hemorrhages associated with cholemia, the results of transfusion were disappointing both as a prophylactic and as a curative measure. In pernicious anemia, transfusion is never curative; nevertheless the authors believe that it is the best remedy for this disease, because it leads to remissions in about half the cases, and thus prolongs life. In leukamia, the results of transfusion warrant a further trial. In infections with pyogenic organisms the results were good. In the subacute forms of striptococcus endocarditis, especially, transfusion may tide the patient over until the blood becomes bacteria free. The last part of this paper is devoted to the general management of transfusions and should be read in the original.

Threatened and Real Gangrene of the Extremities as Seen by the Modern Surgeon. Its Causes and Treatment. Bertram M. Bernheim, Baltimore, *Southern Medical Journal,* June, 1915.

The author considers the various types of gangrene of the extremities and their treatment. In dealing with threatened gangrene in arteriosclerotic individuals the operation of arteriovenous anastomosis is advocated. In these cases the limb presents a circulation slightly impaired, the main feature being most frequently a burning pain coupled with coldness of the foot and toes and severe tingling and numbness. These patients become users of large amounts of morphine, as the pain is of a very severe variety. Hydrotherapy and baking should be tried, but if there is no relief, the femoral vessels had best be exposed and if found patent an arteriovenous anastomosis should be done. If occluded, amputation just above the knee is indicated.

The author deprecates the removal of thrombi as they immediately reform.

The artery should be tied off above and below the thrombus, and an end-to-end or a lateral anastomosis between vein and artery should be done. Or, if the thrombus is so extensive that it is impossible or inadvisable to get below it, a lateral suture between the artery and the vein above it, with a tie put on the vein proximal to the suture, is suggested.

The Futility of Arteriovenous Anastomosis in the Treatment of Impending Gangrene of the Lower Extremity. DeWitt Stetten, New York. *Surgery, Gynecology and Obstetrics,* April, 1915.

As a result of eighteen experiments on amputated limbs, Stetten comes to the conclusion that even in cases of very advanced arterial disease, the arterial circulation is better and easier than the retrograde venous circulation, mainly because of the obstruction offered by the valves and the short-circuiting of the blood through anastomoses of neighboring venous collateral vessels. The operation of arteriovenous anastomosis is successful only in a small percentage of cases and is dangerous in itself. He believes that the successfully recorded operations are successful in spite of rather than because of the operation, circulatory improvement being impossible even if the anastomosis functionates. He regards the term "reversal of the circulation" absurd when clinically applied. He thinks the procedure should be banished from the surgical repertory.

Thrombosis and Embolism. Angus McLean, Detroit. *Surgery, Gynecology and Obstetrics,* April, 1915.

McLean does not see in endothelial damage *per se* which is usually strongly emphasized, a cause of thrombosis. The most important factors in the production of a thrombus are infection and necrosis or the toxins derived from an infectious and necrotic process. A slowing of the bloodstream is a contributory cause, but can not, of itself, cause a thrombus to form.

Late Results of Surgical Treatment for Flexed Scapulae, With a Discussion of the Subject. H. W. Marshall, Boston. *Boston Medical and Surgical Journal,* June 3, 1915.

Marshall reports on eleven cases operated upon at the Massachusetts General Hospital from 1908 to 1912. These patients were suffering from a painful condition of the back supposedly due to some anatomical malformation of the scapula of such a nature that the scapula grated against the ribs when the patient moved his arms. Goldthwait advocated as a cure for this condition, the surgical removal of the tips of the upper angle of the scapula, and the removal of any exostoses which might in any way impede free movement between the scapula and the chest proper.

These patients complain of pain in and about the scapula, radiating up behind the ears and down the arms. There is local tenderness and often crepitus. Most of the cases exhibit round shoulders.

Six of the eleven cases operated on returned for observation and two reported by letter. Six of these eight thought they had been much benefited. None are any the worse after the operation, and no objectionable aftereffects of the operation have been noted. Good function in the shoulder returned after about three months. Mild cases recover without surgery, therefore medical treatment should be instituted in all cases. The most favorable cases for operation are middle-aged persons in otherwise good condition, and the worst cases are found in young individuals from fourteen to eighteen who are nervous and debilitated.

The Use of Magnesium Sulphate in the Treatment of Tetanus. S. J. MELTZER, New York. *Lancet*, June 26, 1915.

Any case of tetanus, mild or severe, should from the start to finish be treated by subcutaneous injections about every six hours with doses of magnesium sulphate. Cases having severe attacks should receive in addition an intraspinal injection. This may be repeated when necessary, but the subsequent doses should be slightly smaller than the preceding ones. If the attack contains an element of immediate danger an intravenous injection may be administered. When for one reason or another the intraspinal and intravenous injections are not practicable, the intramuscular injection plus ether anesthesia may be resorted to. When treating tetanus by magnesium sulphate, preparations for artificial respiration ought to be made in order to be able to use efficient doses of the salt. The pharyngeal insufflation device is the simplest and most reliable method for this purpose. When this device is not at hand, then oxygen should be administered by the method of intratracheal insufflation through the tracheotomy wound. The treatment of the failing respiration should be begun at an early stage; asphyxia of the tissues would thus be avoided and a complete restoration could be attained early. The treatment of tetanus by magnesium, of course, does not exclude its serum treatment.

For the dosage of magnesium sulphate by these various methods of administration the reader is referred to the original paper.

The Preparation of Diabetic Patients for Operation. T. ADDIS, San Francisco. *Journal American Medical Association*, April 3, 1915.

Addis rejects the dangers of infection and non-healing as of importance to be considered in operations on diabetics, and holds that diabetic coma is the only real danger that deserves consideration. Hence the common method of preparing diabetic patients for operation, by keeping them on a sugar-free and starch-free diet, is useless and worse, for it increases the chances of coma. When operation is not immediately called for, it would be of great advantage to supplement the clinical observations by some reliable objective data. The amount of sugar in the urine is no aid in this regard, as the danger to life is the failure, not of sugar, but of the fatty acid metabolism. There is no question as to diabetic coma unless oxybutyric acid or its salts are found in large amounts; and he thinks it probable that there is also a form of death in coma which is not caused by poisoning with acids. The coma in which diabetic patients die after operation is often, at least, accompanied by the excretion in the urine of large amounts of unoxidized fatty acids, but this does not give a reliable indication of the degree of danger. What is needed is a functional test of the fatty acid oxidizing power. The estimation of the degree of impairment of the power of the body to oxidize fatty acids is of prime importance in deciding whether or not operation is advisable. The inability of the kidneys to excrete large amounts of fatty acids is a factor in the production of diabetic coma. The giving of alkali helps the kidneys in this way; and it is important, before operation, to give alkali until the urine becomes alkaline and to maintain this reaction until after operation. Successful storage of glycogen in the body before operation or keeping the urine alkaline are neither absolute barriers against diabetic coma, but are only palliative measures. All the conditions which act together to produce shock serve as exciting causes of the condition known as diabetic coma.

The Use of Silver Leaf in Surgery. (*Die Verwendung von Silberplättchen in der Chirurgie.*) ERICH LEXER, Jena. *Zentralblatt für Chirurgie*, April 3, 1915.

Lexer speaks in unusually enthusiastic terms concerning the dressing of wounds with silver leaf, a method first introduced into surgery by Halsted. It is especially useful in plastic operations upon the face, because it enables one to obtain an almost invisible scar. He also regards silver leaf as the best dressing for skin grafts. He found it useful as a dressing for granulating wounds; the granulations remain flat and the epidermis is stimulated. He applies the leaf in a single layer after cleansing the wound and then applies an ordinary gauze dressing. Lexer believes the silver leaf acts by its antiseptic properties.

The Treatment of Erysipelas and Other Forms of Dermal and Epidermal Inflammation With Carbolic Acid and Alcohol. ASPINWALL JUDD, New York; *New York Medical Journal*, June 12, 1915.

Judd describes some remarkable results following the use of carbolic acid in the treatment of erysipelas and similar conditions. He has used the treatment for a number of years and now has treated over one thousand cases. The treatment consists in painting the affected area and about one-half an inch of the healthy surrounding skin with ninety-five per cent. carbolic acid, followed by a swabbing with alcohol. The alcohol should not be applied until there is distinct whitening of the skin. Following this a wet dressing of any mild antiseptic is applied. This procedure may be carried out even on the most delicate parts of the skin. No scarring results. The temperature and pulse fall rapidly to normal. The general condition improves. There is often a discoloration of the urine, but no other symptoms of poisoning develop. The method does not seem to result as well in children, probably owing to the delicacy of their skin.

The Diagnostic Value of the Determination of Oxyproteic Acid in Carcinoma. (*Uber die diagnostische Verwertbarkeit der Oxyproteinbistimmung bei Karzinom.*) M. DAMASK. *Wiener Klinische Wochenschrift*, May 13, 1915.

The author reviews the literature on the subject of a test for cancer consisting of a chemical examination of the urine for the determination of oxyproteic acid. This substance, as was first pointed out by Töpfer in 1892, is found considerably increased in persons suffering from carcinoma. Considerable subsequent work by other investigators showed that the substance might also be present in increased amounts in other disease conditions. Damask, using the technic elaborated by Freund and Fellner, examined the urine of 121 cases, of which 42 were cases of carcinoma. In 35 of the cancer cases an excess of the acid was found, in 5 cases, i. e., 12 per cent., normal values were obtained. In the non-cancerous conditions, pregnancy and advanced tuberculosis showed somewhat high readings, but all the other pathological conditions gave normal amounts of the acid.

The author believes his results are of considerable value and advocates a more extended use of this chemical method of diagnosing cancer.

The Celluloid Tube in Finger Injuries. Its Use in Adding Length to the Terminal Phalanx After Traumatic Loss of Tissue. J. S. DAVIS Baltimore. *Journal American Medical Association*, May 15, 1915.

Davis has found of great advantage the use of a celluloid sheet wrapped around the end of the finger in treatment of traumatic amputations, in order to produce a more satisfactory cosmetic and functional result. He uses sheet celluloid, 1-200 inch thick. The stump is painted with tincture of iodin, and the celluloid, after being soaked in mercuric chlorid solution, 1:1,000, for a sufficient time, is sponged off with ether or alcohol. It is then wrapped around the finger and secured as a slightly tapering tube with narrow adhesive strips. Properly adjusted, it will hug closely the edge of the wound, and will gradually become larger until it impinges on the first interphalangeal joint. The celluloid may extend as far beyond the finger tip as is needful, and serves also as a splint for the finger, and a protection for the wound. In cases seen early, a blood clot is allowed to form in the wound, and serves as a scaffold for granulations. If the soft parts are lacerated and spread apart, they are gathered together and held by the tube. Effort is made to stimulate the granulations and train their growth along the tube. Any desired medication can be poured in the tube, or packed in with gauze. A loose gauze plug is placed in the mouth of the tube, and over all a simple dressing secured by a bandage. This gives a longer finger, with improved function and appearance. Cases seen soon after the accident give best results.